BUYER'S GUIDE —see p. 26

AMIGA WORLD

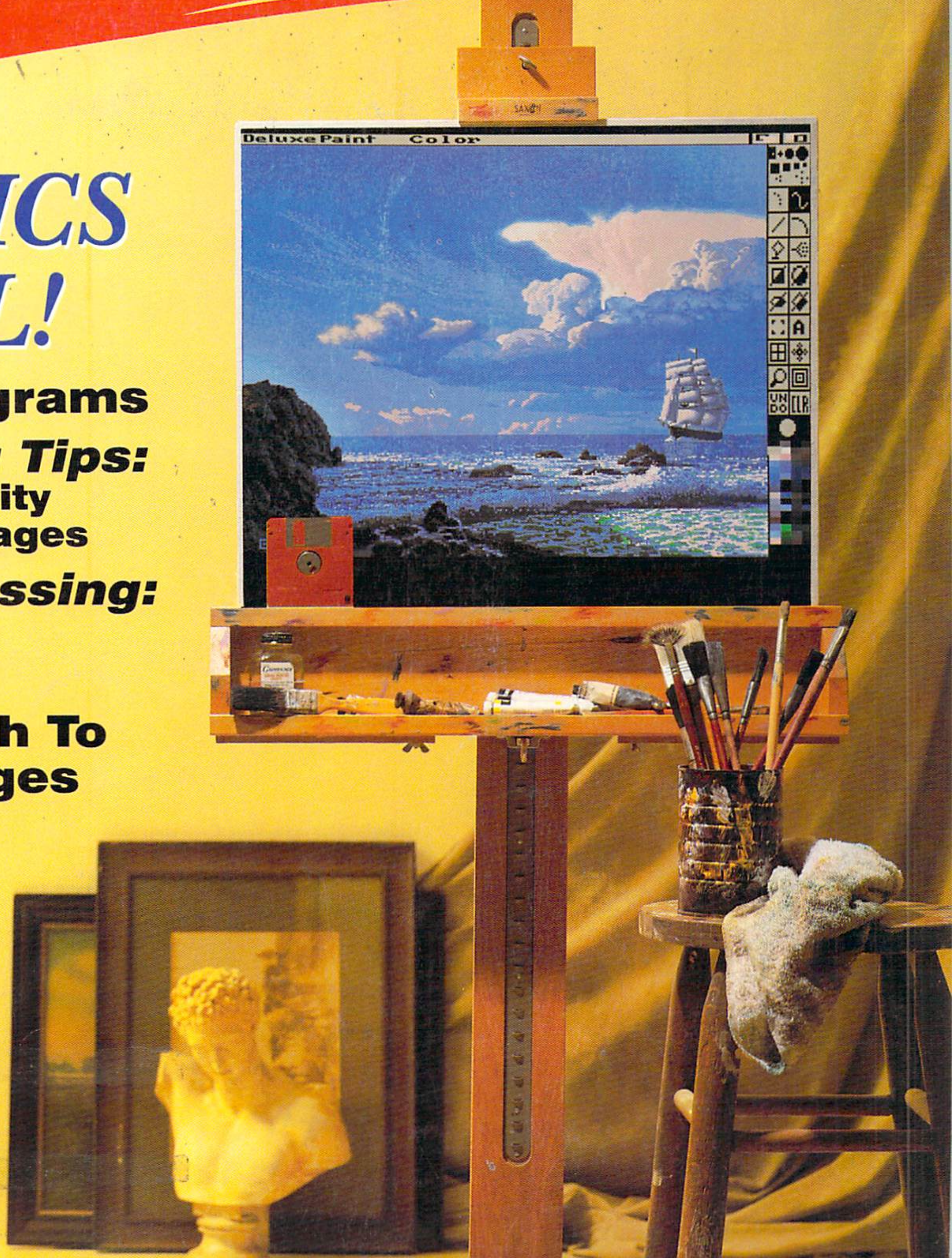
January 1991
U.S.A. $3.95
Canada $4.50
UK £2.50
An IDG Communications Publication

GRAPHICS SPECIAL!

- **13 Paint Programs**
- ***Slide Making Tips:*** **Super Print Quality From Screen Images**
- ***Image Processing:*** **Pro Techniques For Amateurs**
- **Add 3D Punch To Your 2D Images**

Plus!

- **Multimedia Music**
- **C Window Gadgets**
- **Reviews & Games**



01
0 74470 65948 8

A Graphic Demonstration



Deluxe Paint III
has 32 colors* and costs $149.95.

Digi-Paint 3
gives you 4096 colors and costs $99.95.

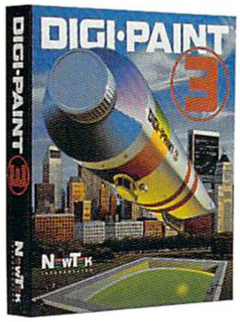
Get the picture?

Which one of the artistic tools pictured here would a child choose? The answer is obvious, the more colors the better. The choice is just as easy when it comes to Amiga paint programs. Digi-Paint 3 works in the Amiga's powerful Hold-And-Modify (HAM) mode which allows you to paint using all 4096 colors simultaneously. By comparison, Deluxe Paint III (by Electronic Arts) operates in less sophisticated modes, restricting you to a maximum of only 32 colors*. What does this mean to your Amiga art? Simply put, the program with more colors makes the better pictures. But that's just one of the reasons Digi-Paint 3 is the ultimate paint program.

Other advanced features found in Digi-Paint 3:

- 14 drawing modes including colorizing, range painting, and texture mapping
- Powerful tools including: magnify, rotate, cut-and-paste, and variable transparency
- Anti-aliased fonts give sharp edges and a crisp television look
- Paint on canvases up to 1024 x 1024 with auto-scrolling
- Supports ***all*** Amiga display modes and resolutions
- Compatible with the Amiga 3000 and WorkBench 2.0

AmigaWorld magazine recently compared the leading paint programs in a head-to-head showdown. A clear winner emerged: **"Digi-Paint 3 is the one to beat for speed, versatility and professional applications."** After six pages of detailed evaluations they concluded with, **"If you are really serious about owning only one paint program, we would have to recommend Digi-Paint 3."**



Digi-Paint 3 is available now at your local Amiga dealer **or call 1-800-843-8934** or 913-354-1146.

NewTek
INCORPORATED

Circle 102 on Reader Service card.

Digi-Paint 3 is a trademark of NewTek, Inc. CRAYOLA, chevron and serpentine designs are registered trademarks of Binney & Smith Inc., used with permission. DeluxePaint III is a trademark of Electronic Arts.

*In some modes an additional 32 half-intensity shades are available.

PROFESSIONAL PAGE™ 2.0

INCLUDES TUTORIAL VIDEO

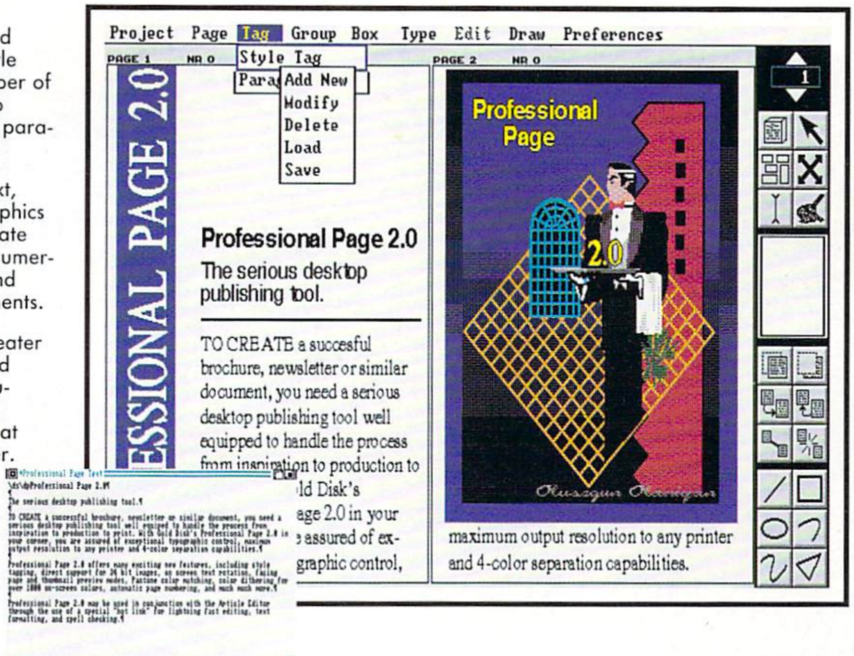
Gold Disk has a publishing program that gives you more creative control over your desktop documents: ***Professional Page***™ **2.0**. Designed for the serious Amiga user who is concerned with sophisticated typography, color design and separation, and production control, this powerful publishing package gives you professional results.

Quick text design changes are accomplished with *Professional Page*'s style tagging. An unlimited number of style tags can be defined to specify any or all type and paragraph attributes.

Put a new angle on text, bitmaps and structured graphics with *Professional Page*. Rotate them at any angle, either numerically or with the mouse, and add pizzazz to your documents.

Customize text with greater control over letter and word spacing. And AGFA Compugraphic fonts, allowing for smooth, jaggie-free output at any point size to any printer.

A built-in word processor provides for quick text writing and editing and includes a 90,000 word spell checker.



Preview multiple pages on screen simultaneously. Now you can review up to six document pages at a time, easily checking your graphic design and text positions for an overall look.

Automatic page numbering is easy with *Professional Page* 2.0. Insert the current page number at any point and it is automatically updated when the page number is changed.

Adding a splash of color is easy with the built-in PANTONE MATCHING SYSTEM.®* With a click you can select from up to 65,000 user-defined colors, and color dithering can display over 1,000 colors at once.

Import and print 24 bit color files, including color separations directly from *Professional Page*--without the need for extra utilities.

For producing simple flyers and brochures to full four color ads and magazines, *Professional Page* is the desktop publishing program of choice. In fact it is used by more magazines than any other package.

And to get you producing professional documents quickly, we have included a free tutorial video tape in every package.

To find out why *Professional Page* 2.0 is the expert's choice, see your local Amiga dealer or call **1-800-GOLD-DSK**. If you take desktop publishing seriously, we're the ones to work with.

Professional Page **is the best, and the best just got better.**

ADVANCING THE ART OF DESKTOP PUBLISHING

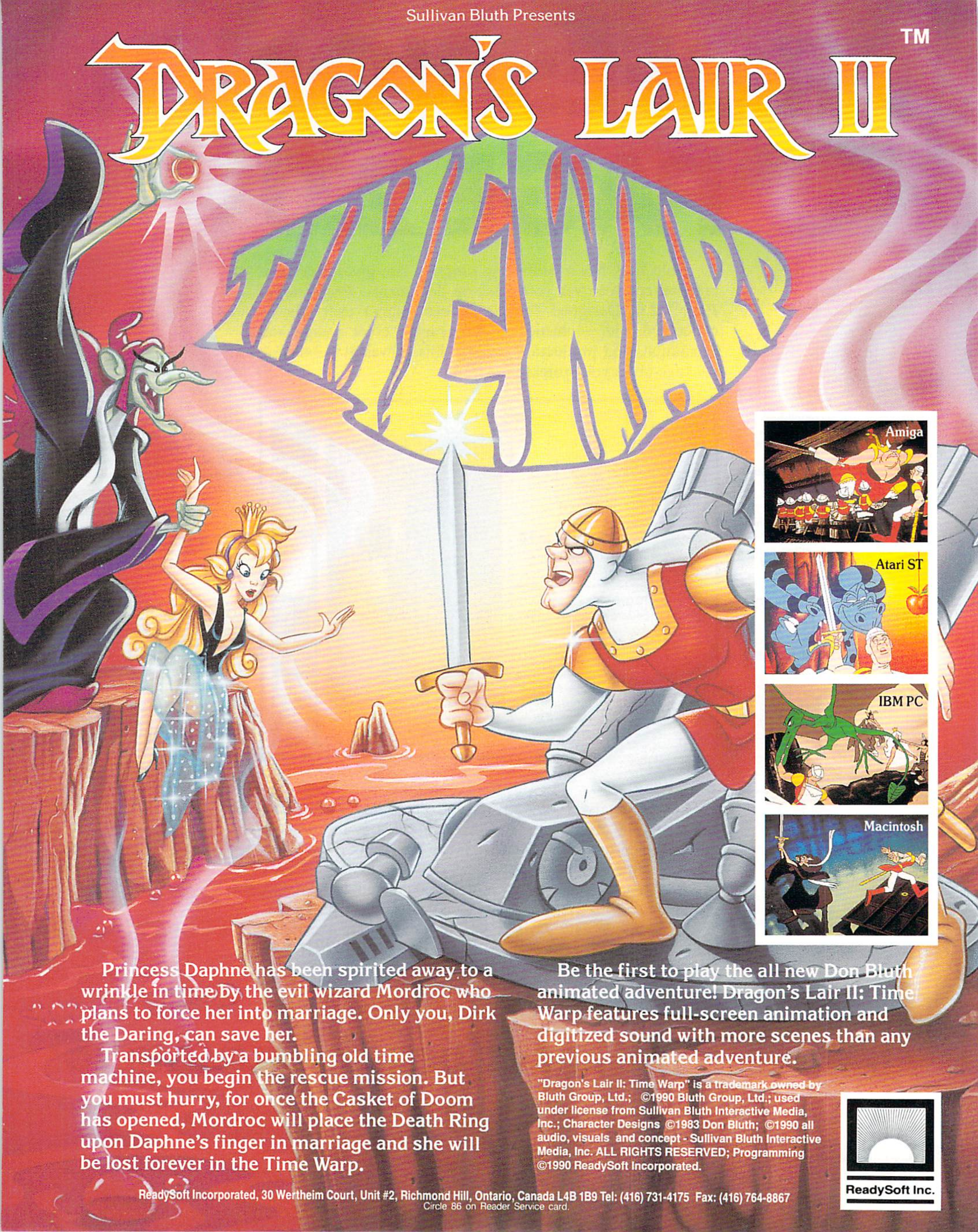
Gold Disk
P.O. Box 789, Streetsville
Mississauga, Ontario, Canada L5M 2C2
416 602-4000

GOLD DISK

This document produced entirely with Professional Page 2.0

Ask your dealer how you can win a Sony® Discman®.

Circle 150 on Reader Service card.

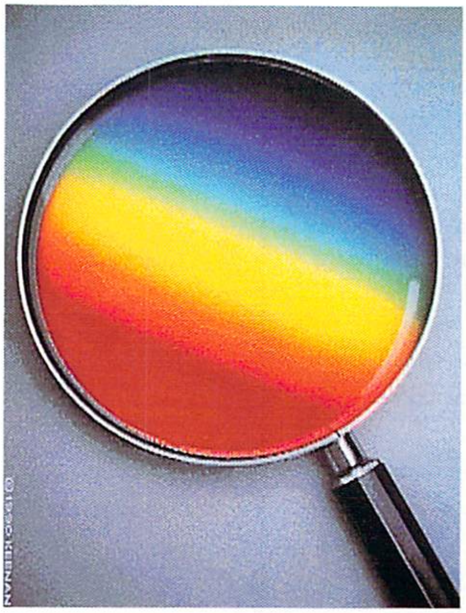

Sullivan Bluth Presents
DRAGON'S LAIR II ™
TIME WARP
Amiga
Atari ST
IBM PC
Macintosh
Princess Daphne has been spirited away to a wrinkle in time by the evil wizard Mordroc who plans to force her into marriage. Only you, Dirk the Daring, can save her.
Transported by a bumbling old time machine, you begin the rescue mission. But you must hurry, for once the Casket of Doom has opened, Mordroc will place the Death Ring upon Daphne's finger in marriage and she will be lost forever in the Time Warp.
Be the first to play the all new Don Bluth animated adventure! Dragon's Lair II: Time Warp features full-screen animation and digitized sound with more scenes than any previous animated adventure.
"Dragon's Lair II: Time Warp" is a trademark owned by Bluth Group, Ltd.; ©1990 Bluth Group, Ltd.; used under license from Sullivan Bluth Interactive Media, Inc.; Character Designs ©1983 Don Bluth; ©1990 all audio, visuals and concept - Sullivan Bluth Interactive Media, Inc. ALL RIGHTS RESERVED; Programming ©1990 ReadySoft Incorporated.
ReadySoft Inc.
ReadySoft Incorporated, 30 Wertheim Court, Unit #2, Richmond Hill, Ontario, Canada L4B 1B9 Tel: (416) 731-4175 Fax: (416) 764-8867
Circle 86 on Reader Service card.

VOLUME 7, NUMBER 1 JANUARY 1991

·C·O·N·T·E·N·T·S·

FEATURES

COLUMNS



"A Case in Paint"—p. 26
As the magnifying glass suggests, the focus this month is on Amiga 2-D graphics. We've scrutinized the subject from every angle and presented the evidence in a 30-page special "Features" section. We hope you'll bring in a favorable verdict.

DEPARTMENTS

REVIEWS

GAMES

COVER PHOTOGRAPH BY ED JUDICE
COVER ILLUSTRATION: ORIGINAL AMIGA ART BY RICK PARKS

AmigaWorld (ISSN 0883-2390) is an independent journal not connected with Commodore Business Machines, Inc. *AmigaWorld* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. U.S. subscription rate is $29.97, one year; $46.00, two years; $64.00, three years. Canada $38.97 (U.S. funds), one year only. Mexico $38.97, Foreign Surface $49.97, Foreign Airmail $84.97 (prepayment is required on Foreign Surface and Airmail subscriptions in U.S. funds drawn on U.S. bank). All rates are one-year only. Second-class postage paid at Peterborough, NH, and at additional mailing offices. Phone: 603-924-0100. Entire contents copyright 1990 by IDG Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. **Postmaster:** Send address changes to *AmigaWorld*, Subscription Services, PO Box 58804, Boulder, CO 80322-8804. Nationally distributed by Kable News Co. *AmigaWorld* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *AmigaWorld* assumes no responsibility for damages due to errors or omissions.

Beauty and Functionality Redefined

THE NEW IMPACT SERIES II™ A500-HD+

The Next Generation in Amiga® 500 Add-On Peripherals

IMPACT Series II

Turn your A500® into a Serious and More Fun Computing Tool Today!

GVP's New SERIES II A500-HD+ is The Ultimate in Hard Drive, Memory and Expandability for your Amiga 500. Major features include:

Leading Edge
Same high-tech custom VLSI and ***FAASTROM***™ features as GVP's new Series II A2000 SCSI-RAM Products.

Foresight
Unique new "Mini-Slot"™ brings out all the A500 expansion bus signals, allowing for exciting future expansion options – the only intelligent alternative to risky "Pass-Through" functionality.

Reliability
Includes internal fan to keep you cool and robust power supply ensuring your A500 power supply will not be overloaded. GVP will not compromise on quality and reliability!

Memory Expansion
Internal RAM Expansion up to 8MB using easy-to-install SIMM memory modules.

Sleek
Custom injection-molded styling perfectly matches your A500 for unequaled beauty and elegance, setting a new standard for A500 peripherals.

State-of-the-Art
New 1"-high internal hard disk drive; available from 40MB through 100MB.

Performance
Provides no-compromise hard disk performance which until now has never been seen on the A500.

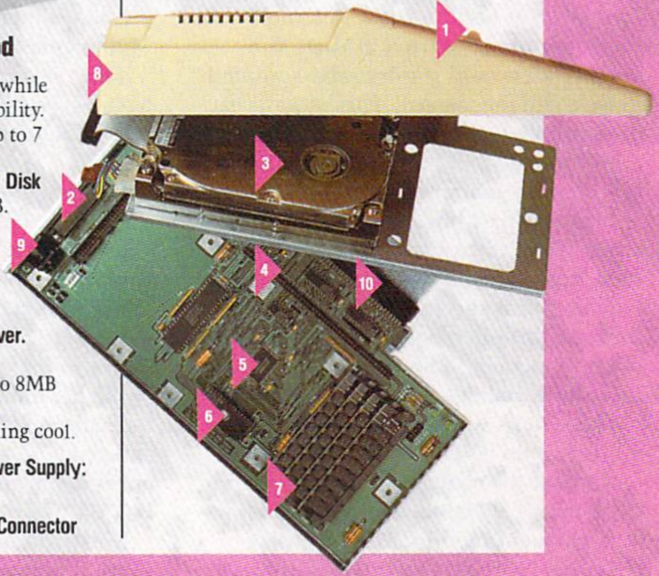
Seeing is Believing
Take one for a Test "Drive" at your nearest GVP Dealer today!

Call for Special End-User Trade-Up Details!



Take a Look under the Hood

1. **Game Switch:** Enables RAM while enabling full game compatibility.
2. **External SCSI Port:** Allows up to 7 SCSI devices to be attached.
3. **1"-High Factory-installed Hard Disk Drive:** 40MB through 100MB.
4. **"Mini-Slot":** For future expansion options.
5. **GVP's Custom VLSI Chip.**
6. **GVP's *FAASTROM* SCSI Driver.**
7. **Internal RAM Expansion:** Up to 8MB
8. **Internal Fan:** Keeps you running cool.
9. **Dedicated Universal Input Power Supply:** Included.
10. **Reinforced 86-PIN Card Edge Connector**



GVP

Educational pricing program now available.

GREAT VALLEY PRODUCTS INC.
600 Clark Avenue, King of Prussia, PA 19406

For more information, or for nearest dealer, call today. Dealer inquiries welcome.

Tel. (215) 337-8770 • FAX (215) 337-9922

Dealers Circle 245 on Reader Service Card

Consumers Circle 127 on Reader Service Card



CHIEF CONCERNS

We're nothing if not flexible—just tell us what you want.

***AmigaWorld* has changed; so what else do you want?** In July of 1989 I went to Ami-Expo in Chicago. It was my first Amiga show ever. In fact, I hadn't even formally joined *AmigaWorld* at the time.

During the job-interview process, however, I not only wrote up a resume but developed a plan to change *AmigaWorld* as well. I'm not sure how, but I was offered the job, so it was off to Chicago, a city even windier than these editorials.

Some of you may remember being corralled and badgered as I sought to discover whether our proposed changes would indeed be positive. About 50 people were cornered and peppered with the same set of questions.

AmigaWorld has always hit a nerve with readers, so there was plenty of feedback about the current mag and what people wanted changed. Some said nice things, and some said nasty things. At least the new ideas seemed decent to people.

After I got back to rustic Peterborough, my phone started to ring. Vendors, readers, and sundry others wanted to welcome me aboard. This was a great opportunity to ask the very same set of questions. Most of these folks also agreed that changes made sense.

That was part one. Then this now larger list of ideas had to get past my staff. Being journalists, they were naturally skeptical and full of questions, but through this often boisterous process came refinement, plus a slew of brilliant ideas from staffers. That was step two.

These steps were the easy part. Then we had to do it. This was actual work.

Many of the changes first appeared in the January '90 issue, and more followed in subsequent months. We purposely chose not to make a stink about the changes, and piles of letters later it is clear that they have gone over pretty well. We still have plenty of critics, but now a larger percentage consists of our competitors.

Here's a quick synopsis before we resume the usual Chief Concerns diatribe:

The editorial was designed to serve as a staunch (read obnoxious) advocate of Amiga technology. Many were taken aback (read insulted, offended) by the initial strong tone of the editorials. But since then, the response has been overwhelmingly positive.

Reviews now include shaded boxes containing your comments about the product, and in most months we add a reader-response section to the reviews, where vendors and users can praise, disparage, or correct our reviews.

We have instituted a more aggressive system of fact-checking. Although we are still refining it, many would-be errors have been corrected.

We developed a column on programming (Pointers), and another on multimedia techniques (Mastering Multimedia).

The focus of Game Preserve, aside from reviews, has shifted from a discussion of game themes to a tip-oriented column.

One of our more problematical departments, Last Licks, was originally developed to include a monthly cartoon, a rumors section, and a humor piece. But nobody laughed at our humor, and there were mixed reviews of the cartoons, so the cartoons and humor get the heave-ho, the rumors (Ear to the Wall) stay, and opinion pieces by *AW* editors and readers, or Amiga users and developers debut with this issue (see Soap Box on page 136).

Notepad never seemed to hit its stride, so we dumped it for a news section (Headliners). Then we added PD coverage (PD Prospector) to help people learn about cheap and free software.

Finally, we decided to go after exclusive coverage of important new products like the A3000, CDTV, and the Disney Animation Studio.

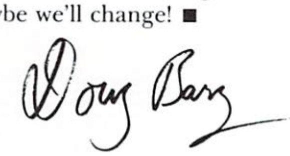
When I go to Amiga shows, I still look for feedback from readers. And they give it! "You did this wrong. You screwed that up again. And by the way, thanks for the great magazine."

It seems that the majority of readers are taking to the new *AmigaWorld*. Unfortunately, some think it is all due to one person, the Editor-in-Chief. While I'd like to take all the credit (and have probably tried to), it must be shared.

One of the primary forces was you, the reader, who told us time and time again what you wanted to see in *AmigaWorld*. Through letters, phone calls, computer networks, and personal encounters, you continue to prod us to change. It isn't always fun to hear the criticism (okay, so some of us kind of like it), but it is always helpful.

Most important is the entire editorial staff of *AmigaWorld*, who shot down my worst ideas and helped develop better ones. That is where our Multimedia, Pointers, Headliners, and PC Prospector columns came from, and that is where the vast majority of feature articles originate. And the staff are the people who spared you more humor pieces in Last Licks.

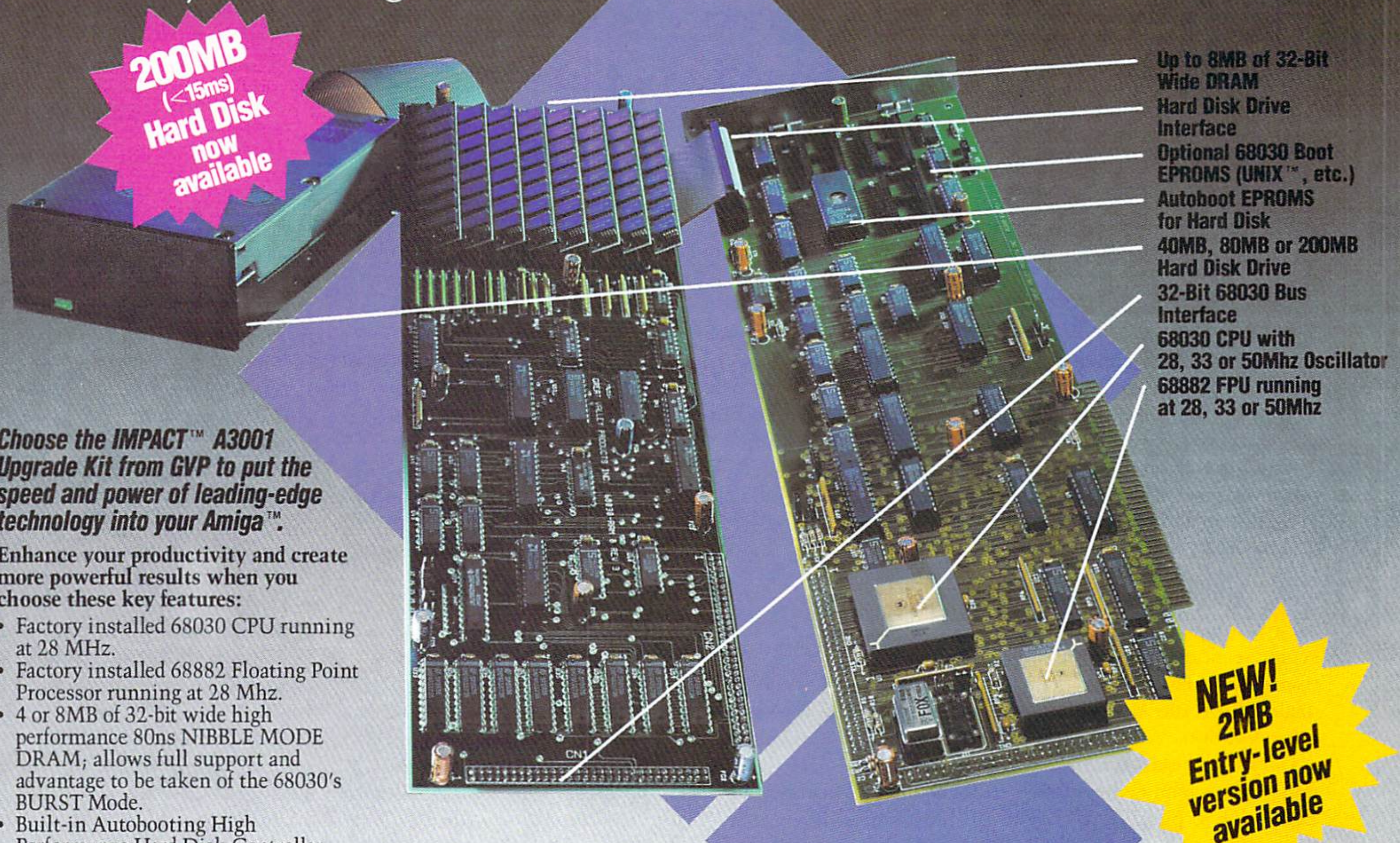
So why am I wasting your time bragging about our magazine? It sounds trite, but it's true: you told us what to do. That is why it has worked. Even though we have made these changes, we are far from done. So call us (snoop in this issue for the toll-free number), write us, corral us at shows, and badger us for a while. Maybe we'll change! ■



IMPACT A3001 UPGRADE KIT

Now Available with 50Mhz 68030 Acceleration

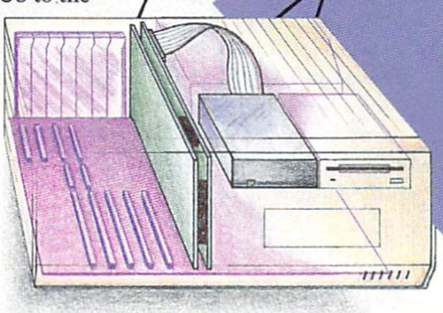
Create the fastest Amiga in the World with an A2000™ and our A3001 Kit.



Choose the IMPACT™ A3001 Upgrade Kit from GVP to put the speed and power of leading-edge technology into your Amiga™.

Enhance your productivity and create more powerful results when you choose these key features:

- Factory installed 68030 CPU running at 28 MHz.
- Factory installed 68882 Floating Point Processor running at 28 Mhz.
- 4 or 8MB of 32-bit wide high performance 80ns NIBBLE MODE DRAM; allows full support and advantage to be taken of the 68030's BURST Mode.
- Built-in Autobooting High Performance Hard Disk Controller with data transfer rates well over 700KB/sec.
- High performance 40MB, 80MB or 200MB hard disk drive with an average read access time of less than 15ms (19ms on write) and 64KB read-ahead cache. If you already own a hard disk, this item can be optional.
- Asynchronous design allowing the 68030 to run ASYNCRONOUS to the rest of the A2000 improving GENLOCK compatibility.
- ZERO SLOT SOLUTION! With the A3001 Configuration along with the bundled 40Q or 80Q Hard Disk Drive ALL A2000 EXPANSION SLOTS ARE LEFT FREE FOR FUTURE UNLIMITED EXPANSION!



When you compare, the choice becomes clear. GVP is unbeatable for price and performance.

COMPARE:	A2000 + GVP A3001	CBM A2500/30	CBM A3000™
68030 CPU	Y	Y	Y
Maximum CPU Clock Speed available & shipping *Today.*	50Mhz	25Mhz	25Mhz
Factory installed 68882 Floating Point Processor Clock Speed.	28-50Mhz	25Mhz	25Mhz
Hard Disk Controller on 68030 Processor Board.	Y	N	Y
Number of *Open* Amiga expansion slots with hard disk drive and 8MB *Fast* memory installed.	5	3	4
Allows user to start with low-cost A2000 Amiga system and grow all the way to 50Mhz 68030 performance without sacrificing anything.	Y	N	N
Brand name vendor with solid reputation.	Y	Y	Y
Fully implements 68030 Burst Mode up to 33Mhz.	Y	N	N

GVP

GREAT VALLEY PRODUCTS INC.
New Address: 600 Clark Ave., King of Prussia, PA 19406

For more information, or for nearest dealer, call today. Dealer inquiries welcome.

Tel. (215) 337-8770 • FAX (215) 337-9922

REPARTEE

Comments, complaints, and concerns

from AmigaWorld *readers.*

Service with a Stamp

The latest problem I have encountered with Commodore and the Amiga is the company's lack of mail-order support. I prefer to purchase Amiga hardware by mail because my local Amiga dealer gives me nothing for my extra dollars. The dealer's staff knows very little about the Amiga and offers no extras, such as a loaner system during repair sessions or a software trial period. For repairs, the dealer sends the Amigas to another location.

Does Commodore, with its policy of no mail-order sales, expect me to purchase my next Amiga at Sears or Toys-R-Us? If so, will their sales personnel be able to answer technical questions? Will they have repair centers at the store? I have no incentive to spend extra money when I will receive no more service. In fact, many mail-order operations now offer excellent service agreements, technical-help hotlines, and other benefits.

I cannot fathom why Commodore wants to pull the plug on mail-order business. If the rationale is to build a dealer network, then the company will fail for two reasons: CBM does not encourage dealers to learn about the Amiga, and it assumes that mail-order business undermines dealers. Consumers who do not feel comfortable purchasing computers via mail need knowledgeable dealers who are capable of helping them analyze their needs and who can demonstrate solutions. As a customer, I want the right to purchace computers from whomever I please—mail-order dealers or local retailers.

Gavin McMillan
Tampa, FL

Breaking Up Is Hard To Do

I just cannot believe *AmigaWorld* is going to split into two magazines. I understand all the excitement over the new Tech Journal, but *AmigaWorld*'s technical information is what prompted me to subscribe in the first place. Instead of introducing another magazine, just add on. Take a look at some of the larger publications such as PC World, BYTE, Computer Shoppers, PC Magazine, and many others that offer three to five hundred pages of features.

I follow BYTE Magazine's Amiga hardware coverage because they dig deeply, amply covering chips, techniques, and processes. Your hardware articles serve only to prompt me to start looking for the appropriate BYTE issue containing the information I need.

I would like to see *AmigaWorld* use a backhoe to dig into the machine more deeply and add to the current magazine. Don't break your magazine in half and fight for advertising. Why split apart into two humdrum magazines instead improving what you have?

Richard D. Harrold
Ferndale, California

AmigaWorld *is not "splitting up" into two magazines; we are adding a new one of a very different nature.* AmigaWorld *magazine will continue with the same coverage and emphases as before. With* The Tech Journal, *we are simply responding to the urgent requests of a specialized and heretofore largely neglected audience of programmers and technically minded Amiga users seeking advanced programming and other technical information on a scale and at a level that* AmigaWorld *has never had sufficient space to include.* The Tech Journal *will be accompanied by a disk of code relating to* The Journal*'s tutorials and articles, as well as relevant public-domain programs.*

As for the advertising scramble, The Journal *will appeal mainly to vendors who do not advertise in* AmigaWorld, *and* AmigaWorld *cannot grow to include the new coverage because the ad pages aren't there to justify additional editorial. Users who don't want both will have to make a choice.*

—Editors

Get Tough

The Wall Street Journal recently ran an article entitled "Apple Peels Prices of Its New Models." The article described Apple's plan to release three new Macs: a low-end, a mid-range, and a high-end model at reportedly very low prices. New models will be simultaneously released in 121 countries and heralded by a three-month, $25-million advertising campaign called "Industrial Revolution."

I have no idea how these computers will compare to the Amiga in terms of price or performance, but I am once again frustrated by the limited marketing efforts of Commodore, and worried about the Amiga's survival.

I've spent the last two months trying to convince the PC-ingrained company where I work to purchase an A3000. Our MIS crew is reluctant to break away from the Big Blue standard, and my solitary voice doesn't carry much weight.

My point is that word-of-mouth advertising is not enough in today's fiercely competitive global computer market. Commodore must undertake aggressive advertising outside Amiga-specific publications. We already know what a wonderful machine it is; tell the *rest* of the world!

Mark J. Sherbine
Ridgecrest, California

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

Headliners

NEWS FROM THE AMIGA COMMUNITY

AmiEXPO California draws record crowd of 12,418, making it the largest Amiga show ever held.

So Long, Mickey Mouse

ANAHEIM, CA—Incongruously ensconced in the child's paradise of Disneyland Hotel, AmiEXPO California (held October 5–7) was a pro's show all the way. Gone was the t-shirted, slapped-together feel of earlier shows; this was replaced by professional-looking booths, presentations, and, most importantly, products.

Progressive Peripherals & Software demonstrated its readiness to help you do more work faster with **040-DC**, its 68040 accelerator. While slightly jury-rigged with a special cooling tower, the board *was* running and was the only one of its kind on the show floor.

The company's 10-meg **VideoMaster 32** (a 32-bit, TI34020-based dual-frame buffer promising 24-bit painting and digitizing capabilities) had much stiffer competition. Five such boards tried to out-demo each other: Besides VideoMaster, there were Impulse's **Firecracker 24**, M.A.S.T.'s **Colorburst**, Digital Creations' **DCTV** (this time accompanied by its 24-bit paint and animation software), and Black Belt System's **HAM-E**. (Meet you at the same time next year to see who wins the 24-bit wars!)

To further improve your display, ICD showed **Flicker Free Video**, an impressively small card that stills interlace flicker on all Amiga models with standard or multisync monitors.

Need to key those graphics over video? Progressive and VidTech have one solution each: The former introduced its new **Video Blender** board and **MixMaster** software, while the latter paraded its S-VHS-compatible **Video-Master** card. Both promise some special-effects capabilities. A newcomer to the video circuit, Spirit Technology, provided a third choice with its **remote-controllable genlock/encoder**.

While usually not as flashy as the video boards, the **hard-drive controllers** put on quite a show. The ability to play full-screen digitized video from disk in real time seemed to be the one audition requirement, and the GVP, ICD, and IVS boards all made the cut. For sheer capacity, GVP took top honors with its **600MB optical drive** and **50MB removable-media drive**, both based on Ricoh technology.

As with hardware, the software on hand was heavily graphics oriented. Two new paint and animation programs were unveiled: the 64-color **Graphics Workshop** (HoloSoft Technologies) and the HAM-mode **SpectraColor** (Oxxi). While showing **Foundation** (a revamped UltraCard) at one end of its booth, Impulse sold copies of its 3-D modeler, **Imagine**, at the other. Also for the 3-D crowd, Progressive introduced **3D Professional's ray-tracing module**.

Those in need of object-oriented software were drawn to New Horizon's **Graphics Designer** and a near-release version of **Professional Page 2.0** (Gold Disk). Surrounded by the colorful banners, miniatures, and newsletters it creates, **Pelican Press** (Pelican Software) drew equally large flocks of admirers. A few aisles away, Right Answers Group proved the long wait for **The Director Version 2.0** was worthwhile. To help you find and organize all your new graphics, Zardoz Software offered **ImageFinder**, an innovative indexing program that shows you miniatures of your images instead of just their file names.

Without doubt, the most attention-grabbing, nongraphics program was **AudioMaster III**, which Oxxi demonstrated continuously at ear-splitting levels. Also of merit were **Vista 2.0**, Virtual Reality's terrain generator, and **Rx_Tools**, an Intuition interface for ARexx from TTR Development.

If the promise of this AmiEXPO is borne out, you could soon be using an 040-, 24-bit-based Amiga with a gigabyte of memory and an optical drive (if your checkbook can handle it). Stay tuned for the next EXPO (March 15–17 in New York City), but note the name change. In a marriage of AMI Shows and AmigaWorld/IDG Communications, AmiEXPO became AmigaWorld EXPO.

—LBL and LRW

Chicago Blues

ROSEMONT, IL—Chicago, known to music lovers as the home of blues, was the site of October's World of Amiga, a show whose modest attendance made some exhibitors blue.

A conflict between concurrent Amiga shows was blamed for the low turnout of both developers and attendees. Exaggerating the sparse attendance was the vastness of the Rosemont Convention Center, where the event took place.

A tangible demonstration of the fact that Amiga developers were torn between the World of Amiga and AmiEXPO California was Commodore's own booth. This massive modular structure—with impressive displays of graphics, multimedia, music, CAD, and the A3000—appeared to have been split in half to accommodate both shows.

Gold Disk made the grade as well as the event by displaying several new products. Company representatives demonstrated the long-awaited **Professional Page 2.0** layout program, lavishing its newest features on the faithful. Text and graphics rotation, style and paragraph tagging, a new Pantone Matching color-reproduction system, and 24-bit color support head the features list. The company's desktop-video production and presentation system, **ShowMaker,** gathered a group of its own admirers, as did **Gold Disk Office**, a combination spreadsheet, word-processing, business-graphics, database, and desktop-publishing package.

Xetec introduced an industry-first CD-ROM drive, the **CDx-650 SCSI**. Xetec's baby reads standard ISI 9660/High Sierra discs as well as conventional compact discs through stereo line-out or headphones. With each of its CDx-650s, Xetec throws in a CD containing over 400MB of software that features the entire Fred Fish collection.

GVP's **Series II Impact** RAM-expanding SCSI hard-disk controllers gave observers a run for their money. Close attention was paid to the company's 600MB Magneto-Optical removable drive, which allows you to overwrite cartridges again and again.

Lake Forest Logic drew passers-by with images displayed and printed using its new high-resolution paint program, **Macro Paint**. The package converts 24-bit scanned or digitized IFF pictures into its own 12-bit, hi-res format.

Amiga-market newcomer TTR Development made its first industry-show appearance at a booth loaded with new products, ranging from its **Sapphire 68020 accelerator to Memory Challenge**, a memory-retention game designed for young children. Also appearing on TTR's roster was **Brigade**, a tactical war-simulation game, and **MRBackup Professional**, a hard-drive back-up program with tape-drive capabilities.

—JJ

Multimedia's Short, Hot Summer

SAN DIEGO, CA—Summer of '90 was hot, and so was multimedia. At least three trade shows, all centered around the theme, occupied this peripatetic producer's agenda. First was the late-August SALT conference in Washington, DC. Commodore made a full assault at this, North America's oldest interactive media show and conference. The company introduced AmigaVision to a virtual who's who of the interactive multimedia industry, and unveiled its video-disc-based, point-of-sale Amiga. Several interactive producers showed their latest Amiga applications. According to lucky attendees, private showings of CDTV compared favorably to the demonstration programs running in the Phillips CD-I (Compact-Disc Interactive) booth next door. Did I detect some tension from the Phillips representatives?

A quick jump to the West Coast took me to the L.A. Cyber Arts Expo, Sept. 6–9. The brainchild of *Mix Magazine* editor Dominic Milano, the conference proved to be as provocative as its name. Intended to foster symbiotic interaction between musicians, computer programmers and artists, the gathering, against all odds, worked. Alas, the Amigas (all three of them) were all but lost among the Macs, keyboards and PCs.

Virtual reality dominated the flashy displays, with MAC, CD-I (no tension here) and PC-based multimedia extravaganzas running a close second. Very Vivid's Mandalla reappeared after a bout with vertical-marketing fever. Although the Very Vivid booth was often unmanned, it was almost never unoccupied, with a constant stream of visitors "playing" the interactive musical application.

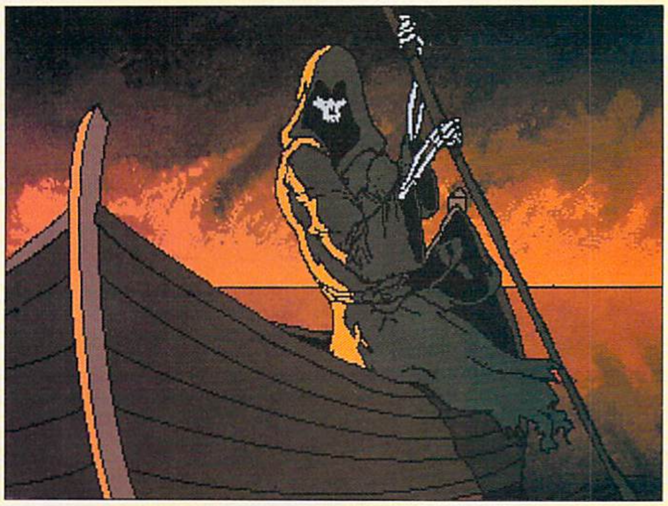
A week and a half later (whew), the "suits" made a comeback at Presentations '90. Although many more Amigas were in evidence at this show than at the previous two, their numbers were still a fraction of the rival platforms; Apple and IBM dominated the Long Beach, California, show and convention. Still, Commodore reprised its Washington dog-and-pony show with a different cast and, once again, wowed the jaded interactive crowd with AmigaVision.

Take note, formerly smug Amiga owners! The competition is closing the multimedia gap. Although the Amiga retains a formidable price advantage, IBM's M-Motion, Action Media boards, and other DVI (Digital Video Interface) products clearly illustrate the importance IBM (and Apple) are placing on this untested technology. One thing was clear: The Amiga needs to make a better showing at industry events if it hopes to succeed in the multimedia marketplace.

—Gene Brawn

Zooming Through Trees with the Greatest of Ease

ARCATA CA—Each summer, the 19 branches of the California State University system pool their efforts and their budgets to allow students to perfect their artistic skills. The result is Summer Arts, the largest interdisciplinary arts program in the Western US. The program site is California State University at Humboldt, on the Northern California redwood coast, and for six weeks the campus is alive with artistic activity, from dance to filmmaking to computer animation.



"Boatman"—by Summer Arts student Steven S. Cummings

This year, ten Amigas ran in one room of the computer lab, and half again as many Mac II's ran in another. Although much of the instructional focus centered on the Macintosh, students were amazed to see how easily 2-D animation can be done on the Amiga. The Mac display, resolution, and color were impressive, but the Amiga's ease of use, sophisticated animation software, short production time, and real-time playback quickly earned a solid group of enthusiasts.

Some students painted animations frame by frame in traditional style, but realized dramatically reduced production times using the Amiga. Pencil tests, coloring, and layering of images are all strengths of the computer medium, and the talented students were quick to capitalize on these advantages.

Next summer's classes are scheduled to include beginning, intermediate, and advanced sessions.

For further information, contact CSU Summer Arts, The California State University, Office of the Chancellor, 400 Golden Shore, Long Beach, CA 90802.

—Joel Hagen

2000-and-1: An Amiga and a Sci-Fi Author

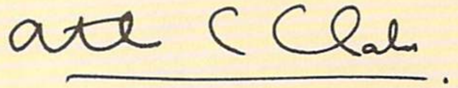
AmigaWorld *editor-in-chief Doug Barney recently received a letter from British science-fiction writer Arthur C. Clarke. Dr. Clarke, who now resides in Sri Lanka, is author of* 2001: A Space Odyssey *(among scores of other books), the originator of communications satellites, and owner of an Amiga 2000. Let's zoom into the middle of the letter, where Dr. Clarke explains what he has been doing with his Amiga . . .*

. . . I use [my Amiga] largely to explore the Mandlebrot Set, which I became obsessed with around 1985, and which is one of the themes of my latest novel, *The Ghost from the Grand Banks*. I've spent many happy hours with MandFXP from Cygnus Software and saved quite a few subsets that I'd discovered.

When passing through the UK in July 1988, I had the privilege of making a television programme with Stephen Hawking and Carl Sagan, "God, the Universe and Everything Else," and I showed Stephen some "Black Holes" that I'd discovered exploring the Set at tremendous magnifications—expanding it to the size of the orbit of Mars. When this programme finally goes on the air, it will show the Amiga to millions of people.

. . . I still have fantasies of getting enough time to do some serious programming on the Amiga, and whether I need it or not, I suppose I won't be able to resist the CD version when it's available.

Meanwhile, my best wishes to all your other Amiganauts out there in Computerland.



—Arthur C. Clarke

Headliners is compiled by Barbara Gefvert. Send your news bits to Headliners, *AmigaWorld* Editorial 80 Elm St., Peterborough, NH 03458.



OBITUS

You're in the depths of your own worst nightmare . . . but this time there's no waking up.

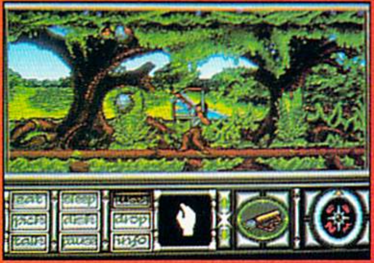
Lost and alone in a dangerous and alien world you must discover where you are, how you got there . . . and how you're going to get out!

In a frantic search of the unfamiliar land you explore aMAZEing forests, mines and underground complexes collecting objects and interacting with indigenous creatures.

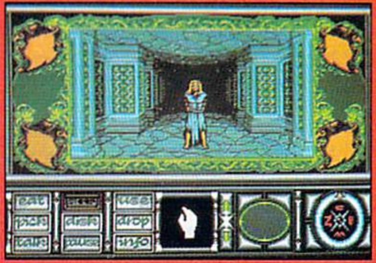
Re-emerging into daylight you race along perfect parallax action scenes, dispatching enemies as you battle ever deeper into the unknown.

Impelling RPG with more than a dash of hack-'n'- slash.

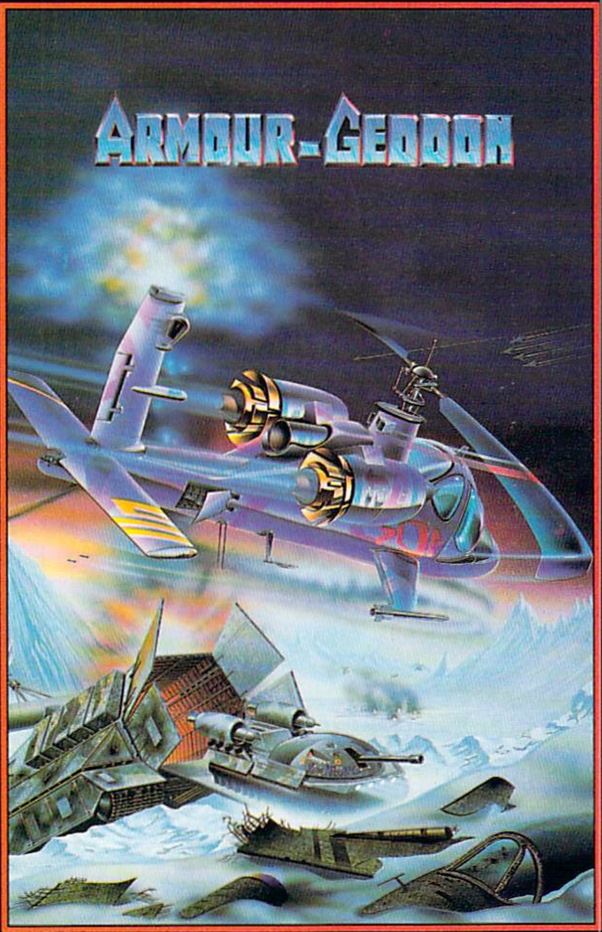
Screen shots from the Amiga version.







PSYGNOSIS



ARMOUR-GEDDON

Post-Holocaust: A power crazed entity desires control of earth. They develop an energy beam and intend to bounce it off a custom-built satellite back to earth . All unprotected life will be wiped out.

You select and control up to six diverse hi-tech vehicles at once in a race against time to seek and destroy enemy power lines and eventually knock out their beam generator.

Build up your arsenal by collecting enemy resources to help develop and create your own new weapon systems.

Featuring a sophisticated head-to-head serial link enabling 'being-there' realism between two players.

Armour-Geddon: Strategy and simulation synthesized to perfection.

Screen Shots from the Amiga version.







PSYGNOSIS
29 Saint Mary's Court,
Brookline, MA 02146
Telephone: (617) 731-3553
Fax: (617) 731-8379

Circle 310 on Reader Service card.



Lemmings
STOP
Save the Lemmings-
and
Commodore Amiga,
Commodore CDTV,
Atari ST
PC Compatibles
PSYGNOSIS
PSYGNOSIS
29 Saint Mary's Court,
Brookline, MA 02146
Telephone: (617) 731-3553
Circle 310 on Reader Service card.

REVIEWS

Draw4D

A class by itself

By Geoffrey Williams

ALTHOUGH CATEGORIZED BY its manual as a multidimensional structured-drawing and animation program, Draw4D is neither a replacement for Gold Disk's Professional Draw structured-drawing program nor a competitor in the latest generation of 3-D animation software. It sits somewhere in between, offering unique capabilities.

Draw4D's primary users will probably be desktop publishers who need to make three-dimensional drawings. Those interested primarily in 3-D as such will turn to such heavy hitters as Imagine (Impulse), Animation:Journeyman (Hash Enterprises), or LightWave 3D (NewTek). As an adjunct to Professional Draw and Gold Disk's layout program, Professional Page, Draw4D offers some interesting capabilities.

When you boot Draw4D, you see two lines in the horizontal plane rotating from the center of a vertical line. These color-coded lines represent the X (red), Y (white), and Z (black) axes, around which you draw your object. You can stop the rotation with the spacebar and begin drawing, or you can choose an X, Y, or Z view by clicking on one of the boxes in the upper-right corner of the toolbox.

Once you have drawn an object, you can rotate it in real time along any of the axes using the number keypad. In fact, you can rotate it along all three axes at the same time. This makes it very easy to change your drawing view or the angle of the object. Rotation is very smooth on an A3000, and even reasonably fast on an unaccelerated A1000. If you are new to 3-D, this method is probably easier to understand than the tri-view approach employed by other 3-D software. It enables you to rotate and see the object as if it actually were a three-dimensional solid.

Unlike Professional Draw, Draw4D is based on polygons rather than bezier curves. In a polygon-based system, a circle is made up of a series of short straight lines connected at wide angles. The more lines, the more smooth and round the circle appears. While common in 3-D programs, this approach is a serious limitation for structured drawing software. Draw4D was not, however, designed to stand on its own. To take full advantage of it in desktop publishing, you need Professional Draw for shading, touching up, and adding detail to an object. Draw4D is not an illustrator's tool, but a tool for creating three-dimensional objects.

To the Point

Everything in Draw4D is point-based. For example, a triangle has three points. To change the triangle's shape, you grab one of the points and move it. Add one point to transform it into a rectangle, or multiple points to change it into a circle. To join two objects, you attach them by their points, not by the lines that make up the objects.

While you can draw objects freehand, the several built-in primitives let you automatically make squares, cubes, triangles, pyramids, arcs, and spheres. You create objects from a series of polygons, and can manipulate them either individually or in groups in a variety of ways. You can clone, stretch, mirror, and slant them by setting the proper parameters and clicking on the appropriate icon on the toolbar.

The tools that transform simple two-dimensional shapes into three dimensions are very powerful. Extrusion is easy, and you can adjust the size of one end of the extrusion to change a square into a pyramid or a circle into a pointed spike. The Sweep tool works like a lathe, transforming a circle, for example, into a sphere or a donut, depending upon where you set the center.

A favorite feature of mine is Pipe Extrude: First, you draw a basic path, such as the curve in Figure 1, for the extrusion to follow. You then create a template shape for the extrusion, as in the pentagon in the upper-left corner. The program extrudes the pentagon shape along the curve's path, creating the teacup handle in Figure 2. This is a very powerful tool that is easy to use, and it greatly simplifies the creation of complex objects.

Draw4D lets nonartists create drawings that would be beyond their abilities otherwise. Making a drawing of a pen, for example, is easier for me in Draw4D than it is in Pro Draw. I would create a



YOUR TURN!

I have only had Draw4D for a couple of weeks, but I've gone through the whole manual and found it not as friendly as some other software manuals. It is set up like a textbook, so it's hard to follow; you really have to dig in to get through it.

The program, on the other hand, is very powerful and does a good job of object creation. It gives you control over all the points in a polygon. It's pretty stable, too; I haven't seen a guru once.

As far as things I wish it offered, I would list texture mapping, IFF-brush mapping, and ARexx support.

George Lunger
Lisbon, OH

circle, extrude it into a cylinder, taper one end, extrude a smaller cylinder for the top button, draw an outline of the pocket clip, and extrude that. Draw4D handles the most difficult parts, which deal with perspective and curves.

Tweaking Text

Draw4D has very good text support. Two fonts are included, and also the ability to create your own font sets. Your fonts do not have to be letters of the alphabet; they could be architectural objects or any set of symbols you might want to assign to the keyboard. In addition, the company promises to release new fonts in the near future.

You can use all of the polygon tools on text, including Pipe Extrude. Creating extruded text and slanting it in perspective is a snap. Once extruded, the entire character set can be saved as a 3-D font. You can create a lot of very impressive text effects this way, and I think this is one of the program's best features.

Once you have created an object, you can enter Render mode and create a solid view in your choice of resolutions, including HAM mode. Unfortunately, this is one of the weakest parts of the program. You can set the direction and intensity of two light sources, but Draw4D does not do ray tracing, so you cannot make objects cast shadows or reflect other objects. For gray-scale desktop-publishing reproduction, the quality is fine, but for professional video work, the results are unacceptable. HAM mode works pretty well, but the dithering routines for nonHAM images are not very good and do not approach the excellent dithering in Pro Draw. Even at their best, the images look cartoonish and far below the standards set by the best 3-D programs.

Obviously, a lot of work went into the program's animation features. Animation is easy: You can transform any polygon into a path that any other polygon or object will follow. Most of the tools that you can use on a polygon you can also use on a path. You can link paths and easily set speeds and acceleration or deceleration rates along the path. Very complex movements can be created fairly easily. There are both Wireframe and Quick preview modes, so that even on an A1000 you can get a good idea of what your animation will look like before you render it.

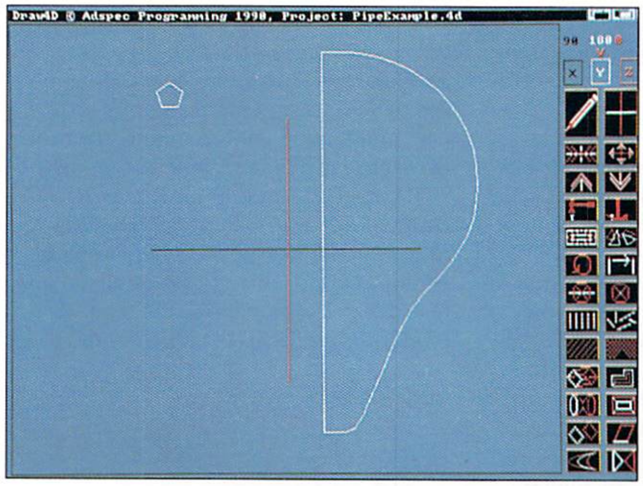


Figure 1. In Pipe Extrude mode, the pentagon at the upper left will be extruded along the path drawn on the right.

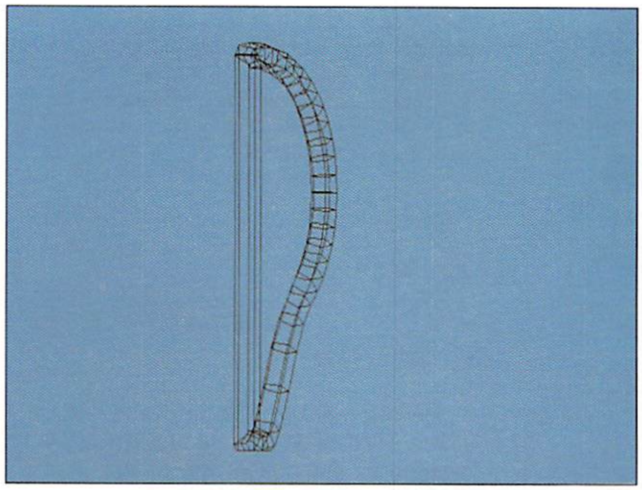


Figure 2. Here's the resulting 3-D teacup handle.

Clips in 3-D

The program's real strength is its ability to save three-dimensional objects as Professional Draw clips. You can create whole sets of objects and then, when you need them, you can angle them into position on your current project and save them out as clips. This is something you just cannot do in a 2-D program, and it gives you a wide range of flexibility in using the objects you create. There have been many times when I needed perspective on a piece of clip art and had to redraw the entire image to make it look right. With this capability, you can position and take a snapshot of the "real thing."

Draw4D also saves in its own format, but it does not save in formats compatible with any other programs. This makes it a dead end as a 3-D development tool, because many people like to model in one program and render in another. It is also unfortunate because Draw4D is a very nice modeler. While there is no standard 3-D file format, if Draw4D supported just one of the major 3-D formats, you could use its objects with other programs by way of a translation utility.

I was also disappointed to find that Draw4D cannot load in anything but its own format—not even a Pro Draw clip. I had been looking forward to digitizing an object, using Pro Draw's autotrace feature on it, and then popping it into Draw4D to extrude it into three dimen- ►

sions. Alas, this is not possible. Increased compatibility with other programs is very important for the future success of Draw4D.

All in all, I like the program, but it has flaws and limitations and does overreach itself a bit. As a tool for creating 3-D drawings for desktop publishing, it is easy to use and does the job quite handily. As a 3-D animation tool, it has powerful capabilities but is limited by the quality of its output and an inability to export objects into other 3-D programs. You can create complex animated movements, but the objects themselves lack realism and detail. Animation capabilities may be all that you need, but I would not buy it for this alone. For desktop publishers, however—especially nonartists like me who wind up having to draw anyway—it is definitely worth consideration.

Draw4D
Adspec Programming
PO Box 13
Salem, OH 44460
216/337-3325
$249
No special requirements.

Mega-Midget Racer

Power to the masses

By Sheldon Leemon

UNTIL THE RELEASE of Mega-Midget Racer (MMR), A500 and A1000 owners could only imagine the exhilaration of running programs eight to ten times faster than on their stock machines. With these users as well as A2000 owners in mind, CSA, first in bringing Amiga accelerator boards to market in years past, introduces the one-size-fits-all 68030 accelerator. Following on the heels of the company's low-cost 68020 accelerator, Midget Racer, MMR represents its next step in bringing increased processing power to the Amiga.

In a word, the Mega-Midget Racer's design adds up to flexibility. You can install the board easily by plugging it into the 68000-processor socket of any A500 or A2000. A little more work, however, is required for an A1000 installation because the board overlaps the disk-drive area. A1000 owners can either convert the internal drive to an external floppy or pay CSA an additional fee to modify the disk-drive cage with a new 1/3-height model.

MMR's CPU and 32-bit RAM each come on separate plug-together modules, which makes for a wide variety of configurations (and prices). While a bare board lists for only $675, the 33-MHz model with a 33-MHz 68882 math coprocessor, 8MB of 32-bit dynamic RAM, and 512K of 32-bit static RAM will set you back $3892. Our test model, a 25MHz 68030 and 68882 with 2MB of dynamic RAM (DRAM) and 512K of static RAM (SRAM), lists at about $2000.

> ***YOUR TURN!***
>
> I just added the memory expansion board to MMR, so I have not really had a chance to test it, but in 16-bit memory, it is the nicest of the accelerators. After trying the board with several major programs, my only problems have been with games. It doesn't seem to make any sense that they will not work in 32-bit memory, but there's real 68000 on board, so I can switch back for games.
>
> ***Karl Kugel***
> *Chatsworth, CA*

The basic Mega-Midget is a rather small board (4 × 5 inches) socketed for a 68030 processor (required) and 68882 coprocessor (optional), four static RAM modules, and your 68000 processor. To install it, remove the 68000, plug it into the MMR, and then plug the assembly back into the 68000 socket. The hardest part of the process is opening up your computer to get to the 68000, but clear instructions are provided. A500 owners need a Torx screwdriver to open the case and remove the metal shielding. A2000 owners must remove the metal cage that holds the disk drive and power supply. Installation should take no more than ten minutes, even if you've never taken your computer apart before.

CALCULATING DECISIONS

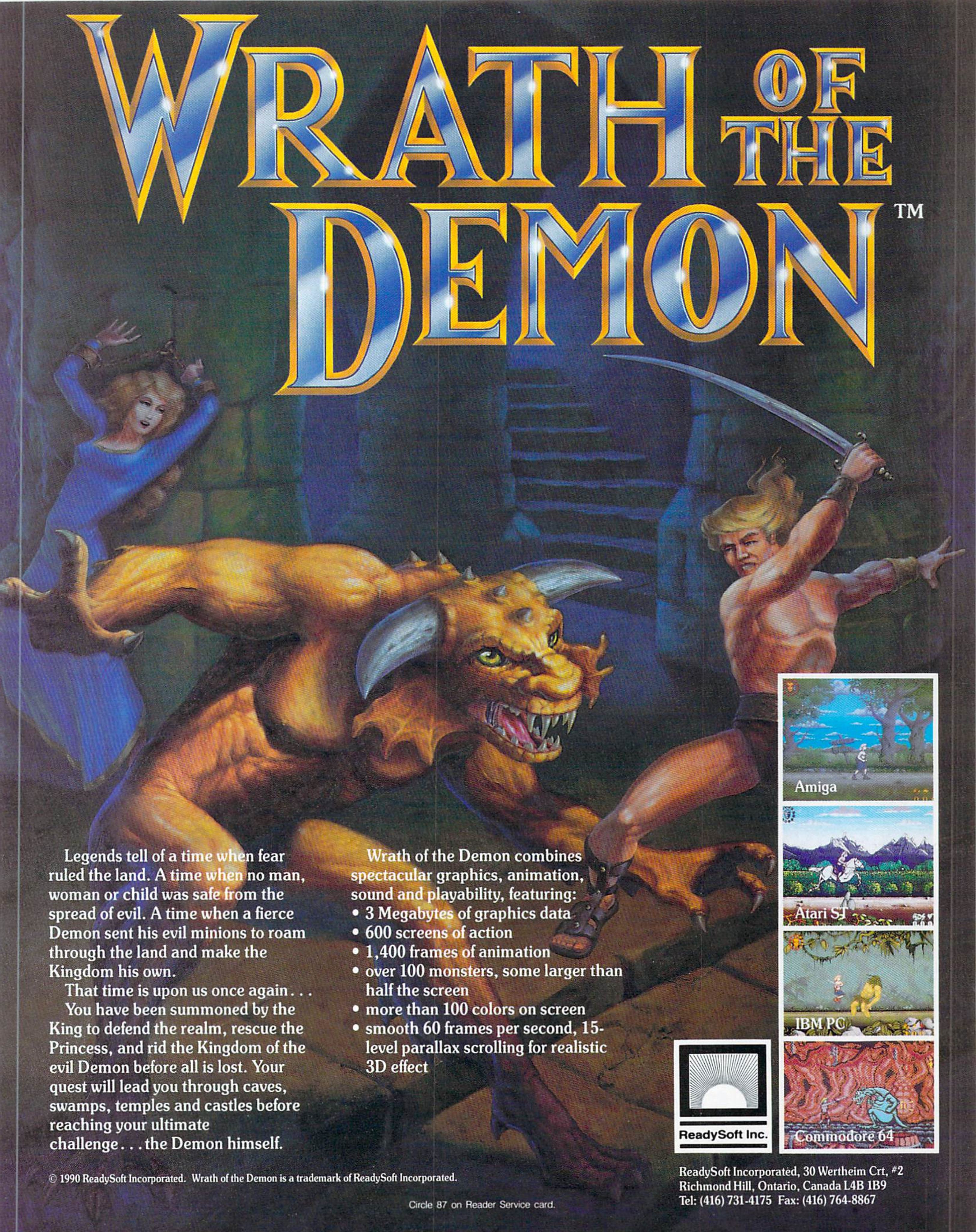
You can add two options to the main board itself. To install a 68882 math coprocessor, simply plug the chip into the waiting socket. As with most accelerator boards, the MMR allows you to run your math chip at the same speed as the 68030 processor, or at a higher speed by adding a faster crystal. Your decision on whether or not to add a math chip should depend upon the type of programs you typically run. The vast majority of Amiga programs do not use high-precision floating-point math, so they will not run any faster with a math chip. The only programs that use such chips are spreadsheets, CAD, and 3-D rendering programs. Adding a 68882 will do nothing for most paint, presentation-graphics, or video-titling programs.

You can also add up to 512K of 32-bit static RAM to the main board by using the four sockets provided. Static RAM is faster—and much more expensive—than dynamic RAM. (The list price on the full 512K is $399 as compared to about $40 for comparable DRAMS.) You can use static RAM as fast 32-bit memory, which, as we will see later, makes a big difference in the performance of this system. With a utility provided, you can move the code for Kickstart 1.3 into 256K of this memory. Running Kickstart out of 32-bit memory accelerates all programs that use the Amiga interface because such programs rely heavily on code within the Kickstart ROM.

Considering its high price tag, many people may conclude that SRAM is not cost effective, especially as you can achieve similar results more cheaply with an optional DRAM board. SRAM prices are falling, however, and if the cost becomes comparable, MMR is ready. Also, CSA maintains that the same four sockets used for SRAM can be used for Kickstart ROMs (or EPROMS) if it can license Kickstart 2.0. If this happens, it will provide an inexpensive solution for 32-bit access to Kickstart as well as an opportunity to upgrade to version 2.0.

If you prefer, you can add less-expensive dynamic RAM to MMR with a Mega-Memory expansion board. Mega-Memory plugs into the end of the MMR and about doubles its size. The socketed board accepts either one or two megabytes of DRAM 256 × 4 DIP chips, or four or eight megabytes of DRAM 1mx4 DIPs. CSA also plans another, smaller version of the the board that will use ZIP-package RAM chips and will not be

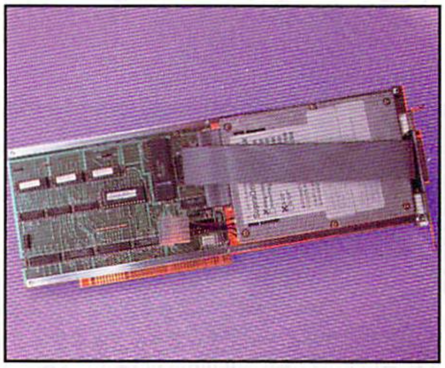
Continued on p. 20


WRATH OF THE DEMON™
Legends tell of a time when fear ruled the land. A time when no man, woman or child was safe from the spread of evil. A time when a fierce Demon sent his evil minions to roam through the land and make the Kingdom his own.
That time is upon us once again . . .
You have been summoned by the King to defend the realm, rescue the Princess, and rid the Kingdom of the evil Demon before all is lost. Your quest will lead you through caves, swamps, temples and castles before reaching your ultimate challenge . . . the Demon himself.
Wrath of the Demon combines spectacular graphics, animation, sound and playability, featuring:
• 3 Megabytes of graphics data
• 600 screens of action
• 1,400 frames of animation
• over 100 monsters, some larger than half the screen
• more than 100 colors on screen
• smooth 60 frames per second, 15-level parallax scrolling for realistic 3D effect
Amiga
Atari ST
IBM PC
Commodore 64
ReadySoft Inc.
© 1990 ReadySoft Incorporated. Wrath of the Demon is a trademark of ReadySoft Incorporated.
Circle 87 on Reader Service card.
ReadySoft Incorporated, 30 Wertheim Crt, #2
Richmond Hill, Ontario, Canada L4B 1B9
Tel: (416) 731-4175 Fax: (416) 764-8867



SupraDrive™ 500XP

Micro-power hard drive, SCSI interface, & RAM for the A500. Easily expands from 1/2 to 8MB RAM. Includes Amiga bus pass-through, SCSI port, software.



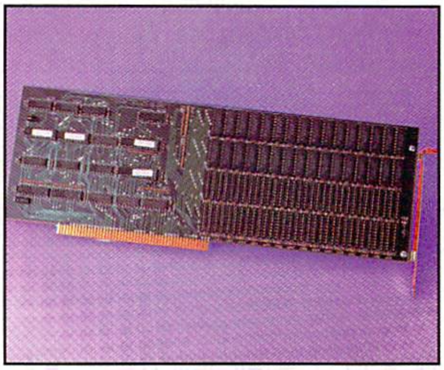
SupraDrive™ WordSync™

Easy-to-install, autobooting hard disk card for the Amiga 2000. Uses high-performance Quantum™ hard disk & includes SCSI port, utility software.



SupraRAM™ 500RX

1/2, 1, 2, 4, or 8MB of FAST RAM for the Amiga 500. Easy to expand. Zero wait states & hidden refresh. Amiga bus pass-through.



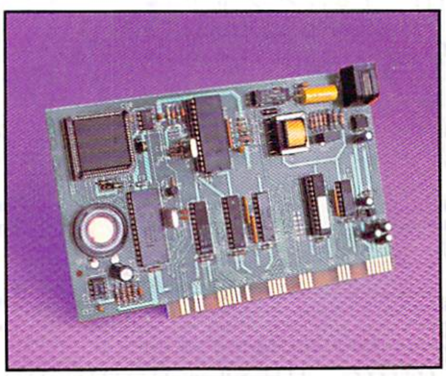
SupraRAM™ 2000

2, 4, 6, & 8MB of FAST RAM for the A2000 & 3000. Easy to expand. Zero wait states & hidden refresh. Four-layer board improves reliability.



SupraModem™ 2400 Plus

SupraModem 2400 with MNP5 & V.42bis error correction & data compression protocols. Allows transmissions up to 9600 bps.



SupraModem™ 2400zi

Internal half-card modem for the Amiga 2000 & 3000. Installs easily in any Amiga bus slot. Supports multiple modems on one computer.

Supra Corporation Worldwide Distributors

Canada
Beamscope
35 Ironside Crescent
Scarborough, Ontario M1X1G5
Tel: 416-291-0000
Fax: 416-291-5721

Finland
Westcom Systems Oy
Kirkkokatu 8, Fourth Floor
SF-48100 Kotka
Tel: 358-52-184-655
Fax: 358-52-184-007

Norway
Atlantis Distribution
Parallellen 12
8012 Bodoe
Tel: 47-816-3040
Fax: 47-816-3041

Spain
ABC Analog, S.A.
Santa Cruz de Marcenado, 31
28015 Madrid
Tel: 34-91248-8213
Fax: 34-1542-5059

Sweden
AlfaSoft AB
Magasingsgatan 9
S-216 13 Malmo
Tel: 46-40-164150
Fax: 46-40-163915

West Germany
European Software Distributors
Rodderweg 8
5040 Bruehl
Tel: 49-2223222-001
Fax: 49-2223222-003

United States

For more product information, or the name of a dealer near you, please call Supra Corporation:

1-800-727-8772

or **503-967-9075**

1133 Commercial Way
Albany, OR 97321 USA
FAX: 503-926-9370

From p. 16
upgradable. This scaled-down version will not overhang the A2000 video slot as the current board does. The company plans a liberal trade-in policy that will allow you to choose another RAM board or increase memory. Both RAM boards have special circuitry that enables them to tailor performance to the speed of the RAM chips used (from 100 to 60 ns), so you should get better performance with faster RAM.

Although you do not need 32-bit memory to run MMR, the board will not perform anywhere near its peak level without it, because the processor can execute instructions only as quickly as it can fetch them (and their associated data) from memory. When the 68030 talks to the 16-bit bus, it must slow down to normal Amiga speed, largely negating the power advantage. A Mega-Midget Racer running without 32-bit memory performs about three times faster than a normal Amiga (or roughly the speed of a Commodore 68020 accelerator board with 32-bit memory), but that's still only about a third as fast as it will go with 32-bit memory attached. With 32-bit RAM, you can gain even more speed by moving Kickstart into this RAM with Dave Haynie's PD program, SetCPU.

Unlike most other accelerators, MMR's memory does not auto-configure—meaning your Amiga will not recognize extra static or dynamic RAM until you add a configuration program to your startup-sequence. On the other hand, because MMR adds memory at addresses outside the normal range of Amiga auto-config space, any memory you add via the MMR will not count towards the 9-MB auto-config ceiling. This means you can add 8MB of MMR RAM *on top of* the normal 9MB of system memory.

Hard Facts

Using a set of tests I devised for a previous review of the Commodore 2630, GVP Impact accelerator, and Hurricane 2800 (see Jul. 1989, p.38), the MMR configuration used (25MHz processor and coprocessor, 2MB of DRAM, 512K of SRAM) ran at about the same speed as most other 25MHz 68030 configurations (including the A3000), and within about 10 percent or so of the 28MHz GVP board. Consequently, the MMR should be considered roughly comparable to other accelerators in its class.

While 32-bit memory provided a big boost in speed, the MMR's performance without it was similar to that of the old 68020-based A2500/20 with 32-bit RAM. Software compatibility was similar to these other boards, with no noticeable problems except for certain copy-protected games. The MMR board lets you switch back to 68000 mode via software if you run into any compatibility problems. About the only problem I encountered while testing the board was with A-Max II, the Macintosh emulator, which functioned somewhat erratically. But A-Max II owners have had problems with other accelerators, too, according to CSA. The fault is with A-Max II, not MMR.

I was quite favorably impressed with CSA's Mega-Midget Racer board. It is neat and well-designed, using a number of custom parts and surface-mount technology (a fairly sophisticated design approach). It is flexible enough to allow users to tailor the system to suit their needs (and pocketbook) and also to transfer to another system when it's time to upgrade. CSA is a well-established company, and I have always found the technical support staff to be knowledgeable and helpful. Most of all, I was impressed with the sight of a mere A500 running as fast as an A3000 or a Macintosh IIci. Going back is tough indeed.

Mega-Midget Racer
CSA
7564 Trade St.,
San Diego, CA 92121
619/566-3911
$675
No special requirements

A2232 Multi Serial-Port Board

Seven ports in which to dock when the serial storm descends

By Lou Wallace

IF YOU USE a wide variety of hardware, one troublesome problem you are sure to encounter is the need to access two devices that require the Amiga's single serial port. For example, you may want to hook up both an external modem and a laser-disc player, both of which join at the serial port. Maybe your printer uses the serial port, too, or perhaps you want to interface with other computers to create your own mini-network. You might also want to set up a multiline BBS, but with only one serial port you are limited to a single line. In all of these cases, the best solution is a multiple serial-port card.

There are a couple of such cards on the market that provide two serial ports, but Commodore's own answer is the A2232, a seven-port serial card for the A2000 and A3000 series of computers (there is no A500 or A1000 card). Because the Amiga's standard serial port is still available when the board is installed, the device gives you a total of eight serial ports. (If you wish, you can add multiple A2232 cards; each board will add another seven ports.) In order to fit seven ports on a single card, Commodore configured them as small, round, mini-DIN ports and tucked seven mini-DIN-to-DB25 serial cables in the package. To attach a standard serial device to the board, you need only use one of the cables.

Installation of the hardware is very simple; just open the computer and insert the card into any of the available 100-pin slots. Before performing the actual installation, however, you should first determine whether the devices you wish to connect require any modification. The A2232 uses pins 2 and 3 to transmit and receive data, respectively. If your serial device requires the opposite setup, and if the cable you are using cannot perform the switch, you can swap the pins using the jumpers that the A2232 provides for each port. While most devices do work in the A2232's default configuration, it will save you some trouble if you check before installing the board in the computer.

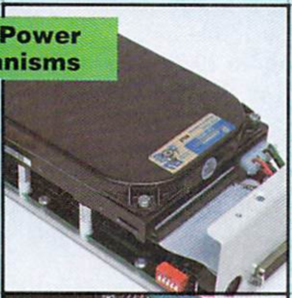
On Disk

Once you have inserted the board and reassembled your machine, you need to install the accompanying software. The two most important items to be added to your system are a serial.device driver (for the SYS:DEVS directory), and a new Preferences program. The new serial.device supports more than one serial peripheral, while the Preferences software has an option for designating which of ►

INTRODUCING THE EXCITING NEW

SupraDrive 500XP





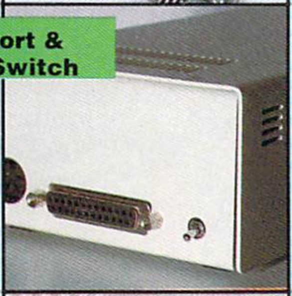
Fast, Micro-Power Drive Mechanisms

- **Micro-Power Drives** No fans or external power required, extra rugged
- **Autobooting SCSI Interface** A2000 performance with no DMA problems
- **Optional Dedicated External Power**



1/2 - 8MB FAST Expansion RAM

- **1/2, 1, or 2MB RAM** On-Board with 256K x 4 DRAM
- **2, 4, or 8MB RAM** with Add-On RAM Board using 1MB x 4 DRAM



SCSI Port & Game Switch

- **Amiga Bus Pass-Through**
- **External SCSI port** allows up to 7 SCSI devices
- **Game Switch** lets you turn drive off and leave RAM enabled



Easy-to-Access Option Switches

- **Autoboot ON-OFF Switch**
- **SCSI ID Selector**
- **RAM Test Mode**

THE ULTIMATE AMIGA® 500 PERIPHERAL!

With a SupraDrive 500XP™, your computing life will change forever.

You'll be able to use software that your computer simply couldn't run before, including paint, digitizing, and animation programs that need more RAM. You'll spend more time using your computer and less time waiting for it to transfer files and load programs, because the SupraDrive 500XP transfers data up to 40 times faster than floppy disk drives.

You can easily add up to 8MB RAM, additional Amiga bus peripherals (like digitizers), or SCSI peripherals (like removable media, tape backups, or add-on hard drives). And if you need help, you can count on Supra's knowledgeable, friendly technical support staff and one year warranty.

Available at your local dealer, or call:

Supra Corporation

1-800-727-8772

503-967-9075, 1133 Commercial Way, Albany, OR 97321, USA

*SupraDrive 500XP is a trademark of Supra Corporation.
Amiga is a registered trademark of Commodore-Amiga, Inc.*

the eight serial ports is to be the default. The A2232 sets up the standard Amiga serial port as port 1, and numbers the ports it provides as 2–8. By using the new Preferences to select any one of the eight as the default, software can work with whichever port you want it to use, not just the standard Amiga port.

Among the other supplied software are a copy of Commodore's AmigaTerm (a telecommunications program that supports multiple serial devices) and some examples of mountlists. Also included are new versions of the AmigaDOS MOUNT command, the Aux-Handler, and the Port-Handler, which are necessary in using the A2232 (the Aux-Handler is used when adding multiple terminals to one Amiga).

The supplied Install program copies the new versions of software to your system disk, but unfortunately it does not actually add any mountlist entries for you. For those with experience in editing a mountlist, this should not be a problem, and even novices should not find the procedure too difficult if they follow the examples that are supplied.

GIVE 'EM THE HOOK

Once I had the board and software installed in my A2000, I added a modem to one port, a Sony LDP 1200 laser-disc player to a second, and a null modem connected with a different computer to a third. Using AmigaTerm, I accessed the modem while AmigaVision (Commodore's authoring language) controlled the laser-disc player. Meanwhile, I used the null modem to send and receive data to and from the other computer.

According to the documentation, the A2232's serial ports support speeds from 50–19,200 baud. Because of some oddities in the A2232, however, it is technically possible (although the documentation does not mention it) to reach a baud rate of 115,200. I did not try this speed myself, but AmigaTerm does support it, and, supposedly, any other software that requests the 115.2K baud speed can get it from the A2232. There are no supported speeds between 19.2K and the "magic" 115.2K baud rates.

The A2232 solved a nagging problem I'd had in using AmigaVision to control DigiView (NewTek's video digitizer) via ARexx (the inter-process control protocol included in AmigaDOS 2.0 and available separately from William Hawes). I wanted AmigaVision to sequentially change frames on the laser disc and then send a command to DigiView (which joins the Amiga through the parallel port) to digitize the image, so that I could automate the creation of a digitized animation. The problem was that as soon as DigiView digitized a frame, AmigaVision lost control of the serial port and the laser-disc player. I solved the problem by using one of the A2232 ports instead of the serial port.

For me, the A2232 was a useful solution to a problem. If your needs are such that multiple serial ports running up to 19.2K baud will be of help, then you should look into the A2232.

A2232 Multi Serial-Port Board
Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380
215/436-4200
$399
No special requirements.

Easyl 1.3

SketchMaster

AProDraw 2.4

If you've got a headache from trying to draw with a mouse, take three tablets and . . .

By Gene Brawn

A FEW YEARS ago, when I first tried a drawing tablet, I found it awkward to use. Its cursor was erratic and unable to keep pace with my drawing. Thankfully, competition has forced vendors to produce more intuitive, responsive software, and the Amiga now sports three makes of digital graphics tablets (Anakin's Easyl 1.3, Dakota's SketchMaster, and R & DL's AProDraw 2.0), with a fourth (from Centaur Software) in the wings. These easy-to-use input devices are attracting traditional artists who are more comfortable using an electronic pen and pad than a mouse.

Animators love them. Using a graphics tablet as an animation table, the artist employs a stylus to trace the animation into the computer cel by cel. Special scaling software, provided with any tablet worth its electrons, allows engineers and draftsman to adjust the screen's scale to match that of a mechanical drawing. Using a puck to enter data point by point from a blueprint directly into a 3-D modeler couldn't be easier. A less obvious application is using a tablet to input database information from standard, pre-printed forms: Simply place the completed form on the pad and point to the items to enter (check boxes work best).



YOUR TURN!

Easyl's 1.3 software seems faster than the earlier versions; lines certainly fill quickly. I like it a lot better!

Al Sanders
Goderich, Ont. Canada

Two For Three

These three tablets use two disparate input technologies. With the Easyl, you can use any blunt object to apply pressure to the pad's surface and thus position the cursor. Two buttons on the Easyl's frame allow you to emulate mouse-button clicks. Both AProDraw and newcomer SketchMaster, on the other hand, provide a plug-in electronic stylus, which you hold in contact with or slightly above the surface of the tablet to direct the cursor. To simulate a right mouse-button click, press the button on the stylus barrel; to simulate a left mouse-button click, gently push the stylus tip against the pad. Both of the latter systems also include a puck as an alternate input device. Similar to a mouse without a roller ball, each puck has three buttons and a crosshair.

Easyl 1.3

The granddaddy of Amiga digitizing tablets is Easyl 1.3. The pad sports an active ►

drawing area of 8.5 × 11.5 inches and mates to the expansion port of the A500 and A1000 via a custom controller box with a pass-through connector. The A2000 controller is supplied on a card. Just plug it in and run the software driver, and you are in business. Power is provided courtesy of your Amiga, so if you have a fully-loaded computer, beware of the possibility of overloading your system's power supply.

Anakin has gone to great lengths to respond to users' needs; the product is much improved over earlier versions. "Lefties" will appreciate software options that orient the pad's mouse-control buttons to their frame of reference. Excellent scaling and set-up utilities are also included, as is a paint program (although I'm not sure why they bothered, considering all the paint software available).

YOUR TURN!

SketchMaster is really good, and while its capabilities are similar to APro-Draw's, it is less expensive. Dakota seems to be a consumer-friendly company, interested in promoting software applications.

It works perfectly with Digi-Paint. One problem I found with Deluxe-Video III is that although it works while you are creating a storyboard, it is not compatible with the play option. I understand, though, that Dakota is working to fix this bug.

SketchMaster's driver is quick and small, and although it does not have a power supply, I found that it worked fine on a stock A2000, on an A2000 with a 68030 processor, and on a fully-loaded A500. The plastic overlay is nice, and both the hardware and software are easy to install.

The package includes drivers for DOS, so you can use it with IBM compatibles. Also, the tablet's connector is nine-pin IBM style, with a 25-pin, Amiga-standard converter.

Ray Adams
Tucson, AZ

The Easyl is light and rests comfortably on my lap. Its input approach allows you to draw directly into your Amiga while preserving the tactile drag and visual feedback of graphite on paper. Because the tablet uses pressure technology, no connected stylus or puck is needed (or supplied). Just place a sheet of paper onto the pad and draw; the pencil's pressure moves the pointer. I thought I would prefer the barrel-switched stylus supplied with most tablets, but after working with Easyl for some time, I'm not so sure—there is something seductive about pencil against paper.

SKETCHMASTER

The newest company on the scene, Dakota, supplies its SketchMaster tablet, manufactured by GTCO, in two sizes: 12 × 12 inches and 12 × 18 inches. Standard equipment includes scaling software, a stylus, a puck, and an external power supply. A nice touch is the plastic overlay that holds and protects paper documents.

Apparently, the tablet gets extra power from the serial port, because it works with the A1000 only if you add a resistor to the power pin on the serial cable. You need to know your way around a soldering iron to make the modification. To hook up the hardware, plug in the power supply and connect it to the pad; then connect a second cable, which extends from the tablet, to the serial port. You set the system-configuration options, including the size of the active drawing area, from the Workbench icons or from the Info requester.

That's the good stuff; here's the bad: A bug in the stylus software causes the cursor to go crazy in the lower third of hi-res screens. Also, the stylus tip is simply too big for fine tracing work.

Neither was I comfortable with the stylus for heavy point-and-click work. When I turned to my mouse for relief, I discovered that it did not work when the stylus was plugged in. If you need mouse functions while you use the pad, you will have to use the puck.

Although scaling software comes with the SketchMaster, it is not up to the level of the other two packages. Unfortunately, based on the unit I tested, I cannot recommend SketchMaster.

APRODRAW 2.0

R & DL Productions sells the Summa-Sketch II line of pads in three sizes: 9 × 6 inches, 12 inches square, and 18 × 12 inches. Because the unit employs an external power supply, you can use a "plain Jane" gender changer to connect the hardware to an A1000's serial port. Complete with AProDraw, R & DL's proprietary driver, the package includes configuration and scaling software, as well as a stylus and a puck.

Another Amiga veteran, R & DL has obviously invested a lot of time to improve its software. The comprehensive scaling program, with its simple point-and-click interface, makes resizing easy. The cursor is very stable (after an occasional hiccup), and an old problem with DeluxePaint's (Electronic Arts) overscan mode was finally fixed. (Easyl and AProDraw also accommodate overscan.) Hooking up the tablet would be easier if the manual had diagrams, especially one that shows that the power cord plugs into the serial-port connector. I had a heck of a time with this.

YOUR TURN!

As director of the Mountain Valley Arts Council, I use AProDraw 2.2 and an Amiga in working with kids in grades four through six. Using the scaling and configuration software, I offset the top edge of the 12 × 12 pad so that the active working area is confined to the lower two-thirds. By doing that, we can hang the keyboard off the edge of the tablet and use both it and the pad in controlling DeluxePaint.

When selecting DPaint's shape-drawing commands, input from the tablet is slow and tends to overshoot. For such things, the mouse is faster and more effective. We find, however, that using the pen is easier than the mouse for freehand drawing. AProDraw is very intuitive; in fact, nothing else does as good a job. We used a pressure-sensitive pad, the Easyl, for a while, but found that kids were forever leaning on it, causing the cursor to move to the spot they were touching.

With version 2.2 of the software, R & DL cleaned up a lot of bugs. There are still incompatibilities with some software, though—I think because APro-Draw works at the system's exec level. I was using the Q-Mouse program to blank the pointer, for example, and found that once the pointer disappeared from the screen, it wouldn't come back without a mouse present.

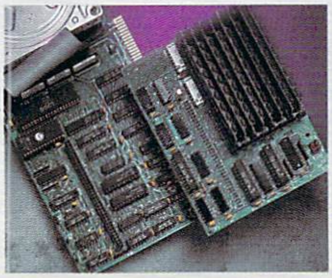
John Dandurand
Guntersville, AL

The stylus supplied with this pad is much better than that offered for Sketch-

Continued on p. 94

BODEGA BAY™





The Malibu Board™ SCSI Controller and Catalina™ Ram expansion daughterboard.

- A mounted hard disk and up to 8MB in a single A2000 slot
- Comprehensive installation software
- Ram in 2, 4, and 8MB combinations on the Catalina Card
- Malibu Board — $229.95
- Catalina Card — $99.95

Circle 41 on Reader Service card.

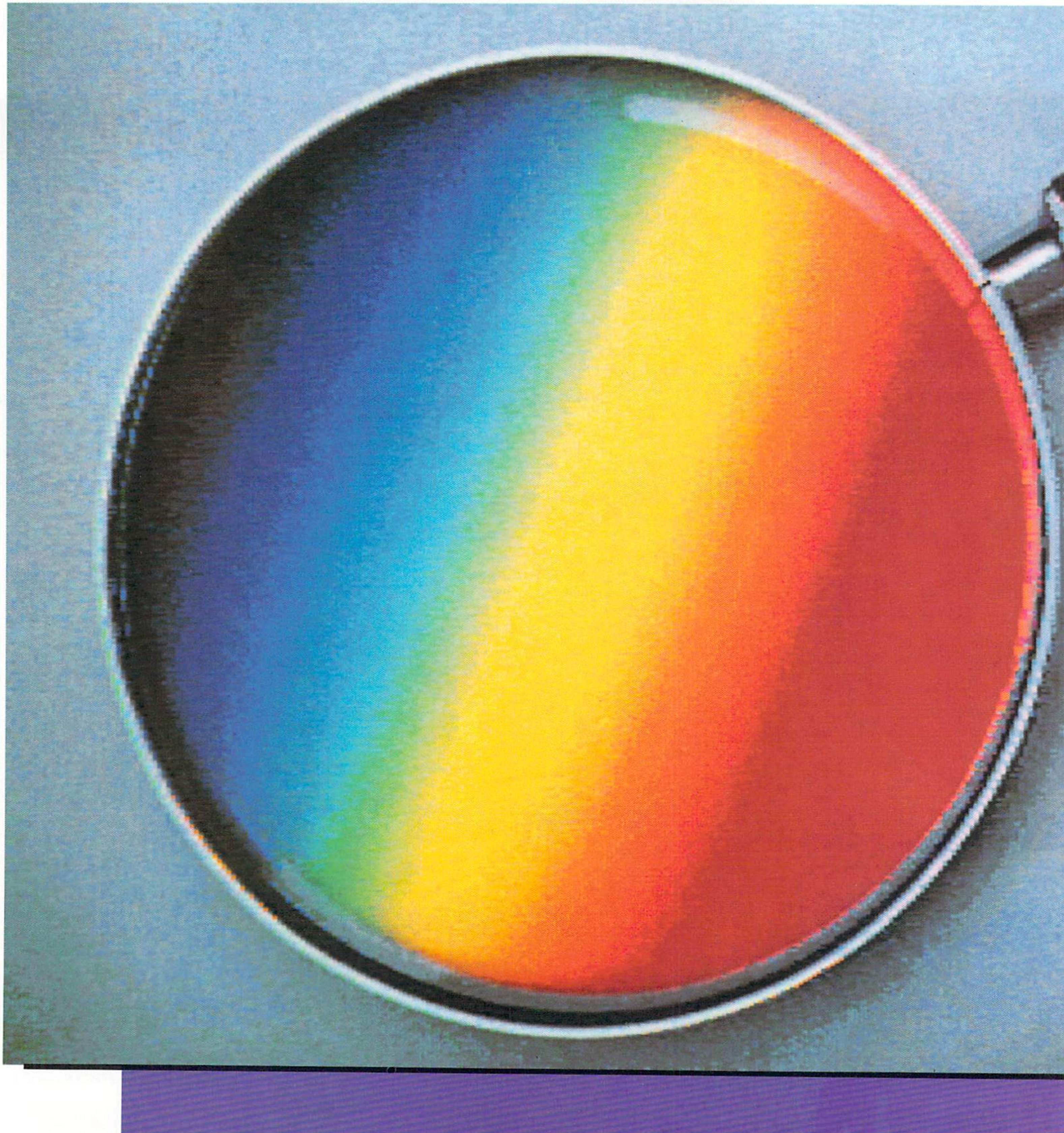
The Bodega Bay™ modular expansion console.

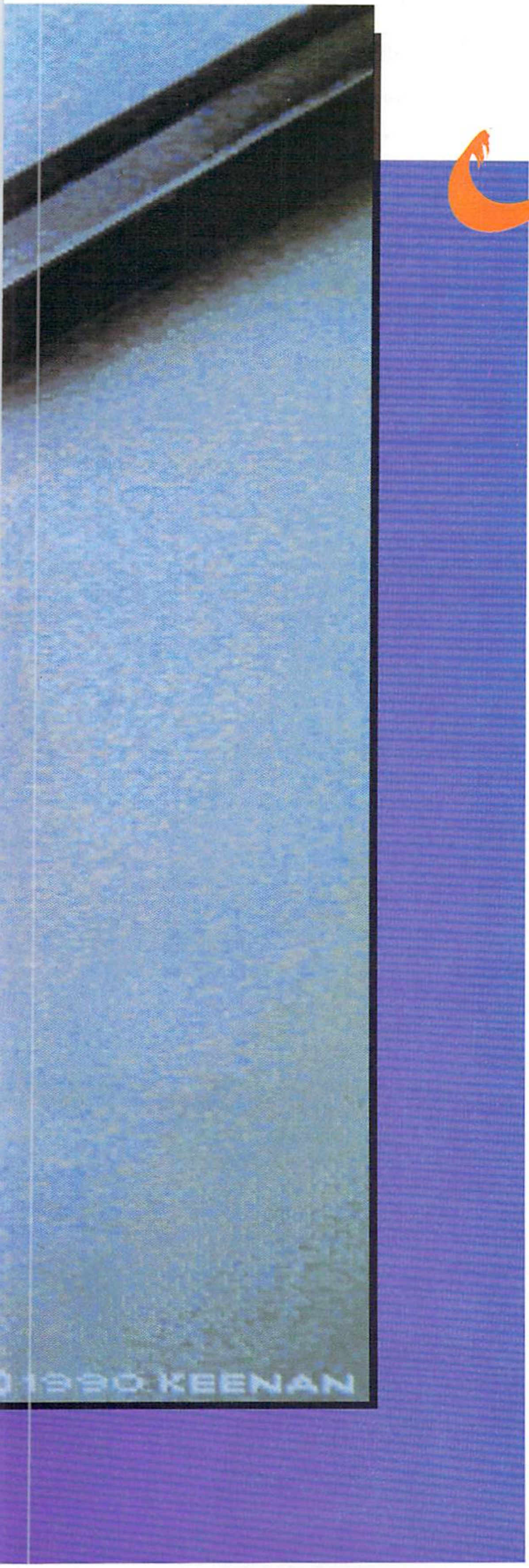
- 4 Amiga 2000 slots
- 3 PC XT/AT slots (overlap with Amiga slots)
- 3 drive bays
- A 200W power supply with fan
- Full A2000 compatibility*
- $349.95 introductory price

*Video and co-processor upgrade options coming soon. Contact your local dealer for more details or call (408) 378-0340

CALIFORNIA ACCESS™

Your Access To The Future





A Case in Paint

We'll play Holmes to your Watson as Detective Brawn scrutinizes this Baker's dozen of Amiga paint programs. Whether you need blue carbuncles, orange pips, silver blazes, or just a simple study in scarlet—it's an elementary deduction that you'll find one member of this speckled band that can deliver a solution.

By Gene Brawn

NOT SURPRISINGLY, THE Amiga boasts no fewer than 13 2-D paint programs, plus a few more if you take into account those included in software bundled with other equipment, such as Toaster Paint. Granted, the Amiga is an artist's dream machine, but is that reason enough to justify the creation of so many applications? Perhaps not, but if a program is highly successful, then others will copy it. In addition, if there is a chink in the leader's armor, an entrepreneur will surely exploit it.

A good case in point is **DeluxePaint III** (Electronic Arts). Although it dominates the 2-D paint marketplace, it is by no means the *complete* package. DPaint lacks important HAM capabilities, its text handling leaves me cold, and novices are often intimidated by its power. Enter **Digi-Paint 3** (NewTek) to fill the HAM gap, **Express Paint** (Oxxi) to address the text problems, and, recently, **My Paint** (Centaur) as a candidate for the preschool Picasso not yet ready for a powerful paint package.

This multiplicity of paint programs for the Amiga is a blessing in disguise. Because no one program ►

ILLUSTRATED BY LARRY KEENAN

does it all, I routinely use three or four to complete my average project. Amiga artists are fortunate to have such high-quality, inexpensive graphics software so readily available. Take advantage of this abundance and use the right tool for the job, which is what the 12 comparison charts that follow are designed to help you do.

But First a Word from the Author

Before we get to those comparisons, I have to admit I have my own favorites for a variety of different circumstances. Based on personal experience, here are my proven winners in several categories.

Best Niche Program

It's My Paint, hands down. I had a great time playing with this colorful, noisy program. Designed for kids up to eight years old, My Paint features an animated, iconic toolbox that is as much fun to look at as it is to use. Although the program allows for only 12 colors, that is enough to satisfy the bold, primary-color requirements of the unsophisticated young artist.

Programs up to 64 Colors

DeluxePaint III remains the standard, despite stiff competition from Express Paint and newcomer **The Graphics Workshop** (Holosoft). DPaint's responsive, if not spartan, interface sets the standard by which 2-D paint programs are measured. Fast, functional, and powerful, it is the professional's choice.

Not Much for the Novice

I regret that I cannot recommend any of the programs designed for beginners. **Images** (Oxxi) is creaky with age; **The Graphics Studio** (Accolade) is too limited and too Mac-like for the Amiga environment; and **Spritz** (Oxxi) is so similar to the same company's Express Paint that I wonder why it exists at all. Instead, I advise that even for this category you stick with DeluxePaint III. With a little effort, you will find it works on nearly any level, and it is blessed with a great manual.

24-Bit Color

Both **Mega Paint** (Pseudo Vision) and **Macro Paint** (Lake Forest Logic) have internal palettes of 16 million colors, but each displays its results differently. Macro Paint's ability to work in NewTek's Dynamic HiRes mode is a programming *tour de force*. Regrettably, the software's functionality is severely limited by a small set of basic tools. Mega Paint, too, is crippled by an even more limited toolbox and an innovative, but ultimately disappointing gray-scale interface. In fairness, these applications are designed for frame buffers and 16-million color displays, and this makes it difficult to compare them with more traditional paint programs. Unfortunately, however, both programs seem more like demonstration versions than

About the Charts

Amiga 2-D paint applications can be grouped into five categories, all based in one way or another on color count: "Novice" (which includes the "Kids" designation for My Paint and by which we mean programs with 32 colors or fewer), Extra_Halfbrite (64 colors: 32 plus an additional 32 in Halfbrite mode), HAM (4096), and 24-bit RGB (16 million); the "All" (resolutions) category is the sole province of **Deluxe PhotoLab** (Electronic Arts). It is included here solely to emphasize the need for more applications in this neglected area. Although I tried to provide as much information about these programs as I could, not every function of every program appears in the lists. Some tools I judged to be frivolous, others too obscure.

Chart Symbols:

• = Function or feature available

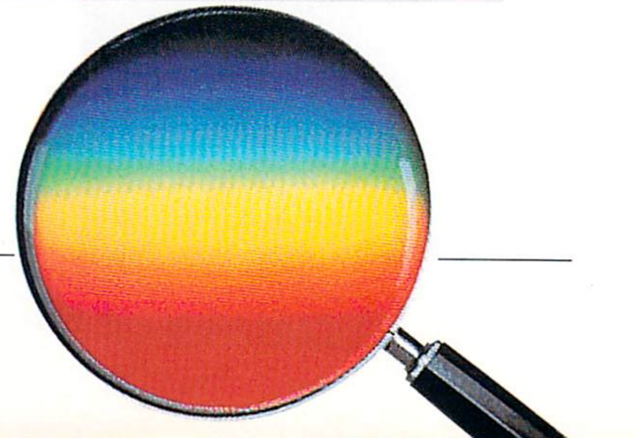
c = Limit of chip RAM

r = Limit of all RAM

Table 1. Amiga Paint Programs

PROGRAM	CLASS	PUBLISHER	PRICE	MINIMUM MEMORY
My Paint	Kids	Centaur	$ 49.95	512K
The Graphics Studio	Novice	Accolade	$ 49.95	512K
Images	Novice	Oxxi/Aegis	$ 99.95	512K
Spritz	Novice	Oxxi	$ 79.95	512K
Chroma Paint	64	Designing Minds	$ 39.95	512K
DeluxePaint III	64	Electronic Arts	$149.95	1MB
Express Paint	64	Oxxi	$139.95	512K
The Graphics Workshop	64	HoloSoft Technologies	$100.00	1MB
Digi-Paint 3	HAM	NewTek	$ 99.95	512K
Photon Paint 2.0	HAM	MicroIllusions	$149.95	1MB
Deluxe PhotoLab	All	Electronic Arts	*	1MB
Macro Paint	RGB	Lake Forest Logic	$139.95	1MB
Mega Paint	RGB	Pseudo Vision	$249.00	2MB

* No longer sold separately, but bundled with DeluxeVideo III for $149.95.



finished applications. I cannot recommend either.

The HAM Wars

A tough choice here, but I go with Digi-Paint 3, despite its studied ignorance of fill and perspective tools. The elegance of its smoothing and shading routines, coupled with a logical and responsive interface, make it a pleasure to use. With all due respect for its power and the novelty of its 3-D texture map-

Continued on p. 34

Table 2. Display Management

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Menus On/Off		•	•	•	•	•	•	•	•	•	•	•	•
Status Display													
file name				•		•	•				•		
cursor x/y		•			•	•	•	•	•	•	•	•	•
memory status						•	•	•					
mode		•				•			•	•	•		•
frame number						•		•		•			
x/y/z degrees						•	•			•			
Clear Screen	•	•	•	•	•	•	•	•	•	•	•	•	•
Change Resolutions		•		•	•	•		•	•	•	•		
Auto Configure Pix[1]						•	•	•	•	•		•	•
Center Display[2]				•			•				•		•
Center Cursor[3]						•					•		•
Fast Feedback						•	•	•					
Spare													
merge		•		file		•			•	•			
copy					•	•	•	•	•	•		•	
number		1	1		r	r	10	1	1	r	r	1	

Notes:

[1] Auto Configure Pix: Sets the display to the new picture's resolution.

[2] Center Display: Displays the center of the image, regardless of resolution.

[3] Center Cursor: Centers the image beneath the cursor.

Table 3. Display Formats

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Lo-res	•	•	•	•	•	•	•	•	•	•	•		•
Hi-res		•	•	•	•	•	•	•			•	•	•
Interlace			•	•	•	•	•	•	•	•	•	•	•
Extra_Halfbrite				•	•	•	•	•			•		
HAM									•	•	•		•
24-bit RGB												•	•
Dyna-res/A-res												•	
Overscan													
max horizontal (pix)				704		704	758	672	384	352	r	r	
max vertical (pix)				440		480	440	440	480	480	r	r	
SuperBitmap													
max horizontal (pix)				8192		r	r	1024	1024	1024	r	r	
max vertical (pix)				c		r	r	1024	1024	1024	r	r	
PAL				•		•	•	•	•	•	•		

Table 4. Tools

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Airbrush		•	•	•	•	•	•	•		•	•	•	•
size nozzle			•	•	•	•	•	•		•	•	•	•
adjust density			•		•		•	•			•		
pattern spray						•		•					
shape													
round		•	•	•	•	•	•	•		•	•		•
rectangle			•	•	•		•						•
custom					•			•					
Freehand													
dotted		•			•	•	•	•	•	•	•	•	•
continuous	•	•	•	•		•	•	•	•	•	•	•	•
filled			•	•		•	•	•	•	•	•		•
Line													
rubber band		•	•	•	•	•	•	•	•	•	•	•	•
radiant		•						•					
Curve													
3-point			•	•	•	•	•	•		•	•	•	•
4-point				•			•	•			•		
arc			•				•						
wedge							•						
Rectangle													
outline		•	•	•	•	•	•	•	•	•	•	•	•
filled		•	•	•	•	•	•	•	•	•	•	•	•
Circle													
outline		•	•	•		•	•	•	•	•	•	•	•
filled		•	•			•		•	•	•	•	•	
center		•	•	•		•	•	•	•	•	•	•	•
corner						•					•		
Oval													
outline		•	•	•	•	•	•	•	•	•	•	•	•
filled		•	•		•	•		•	•	•	•	•	•
center		•	•	•		•	•	•	•	•	•	•	•
corner					•	•				•			
Polygon													
outline		•	•		•	•	•	•	•	•	•		
filled		•	•		•	•		•	•	•	•		
Fill													
boundary[1]		•				•				•			
color[2]	•			•	•	•	•	•		•	•	•	•
brush				•	•	•	•				•		•
solid				•	•	•	•	•		•	•		
pattern			•		•		•			•	•	•	
gradient			•			•	•			•	•		
horizontal			•			•	•	•		•	•		
vertical			•			•	•			•	•		
shape										•	•		
highlight							•			•	•		
dither			•		•	•	•	•		•	•		
text							•						
perspective						•	•	•		•			
Abort Operation		•		•	•	•	•		•	•	•		•

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Right Button Draw						●				●	●		
Keep Aspect Ratio		●	●	●		●	●			●			

NOTES:

[1] Fill/boundary: Fill all colors until the selected color is reached.

[2] Fill/color: Fill all contiguous pixels of the selected color.

Table 5. Brush Tools

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Types													
copy		●	●	●	●	●	●	●	●	●	●	●	●
cut-out		●			●	●	●		●	●	●		
rectangle		●	●	●	●	●	●	●	●	●	●	●	
freehand				●			●	●	●	●	●		●
polygon						●			●	●			●
built-in	●	●	●	●	●	●	●	●	●	●	●	●	
patterns		●	●		●		●						
matte		●		●		●	●	●	●	●	●		●
ASCII							●						
Resize													
freehand		●	●	●	●	●	●		●	●	●		●
keep aspect ratio						●	●			●			●
smooth						●	●		●		●		
half						●	●			●		●	
double						●	●			●		●	
Rotate													
fixed		●				●	●	●	●	●	●	●	
freehand				●		●	●	●		●	●		●
slant/shear						●		●					
flip x/y		●	●	●	●	●	●	●	●	●	●	●	●
Multiple Brushes[1]				r		r	c	r	2				
Reposition Handle						●	●	●			●		
Remap Colors				●		●			●	●	●		
Transparency		●	●	●	●	●	●	●	●	●	●	●	●
Wrap													
2-D						●		●	●	●	●		
3-D[2]										●			
Bend						●				●			
Twist										●			
Spacing					●	●							
Restore Brush		●		●		●			●	●	●		
Shadows		●						●					
Perspective						●	●	●		●			

NOTES:

[1] Multiple Brushes: Includes ANIMbrushes.

[2] Wrap/3-D: Built-in 3-D objects.

Table 6. Drawing Modes

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Color	•	•	•	•	•	•	•	•	•	•	•	•	•
Replace		•				•		•			•		
Smear			•			•	•	•					
Smooth					•	•	•		•		•	•	•
Antialias			•			•	•	•	•	•	•		
Blend			•			•	•		•	•	•		•
Cycle Draw	•	•	•			•		•		•			
Boolean													
AND/Colorize							•	•	•	•	•		
tint/luminance						•	•	•		•		•	•
SUB/ADD (shade)					•	•	•	•	•	•	•	•	•
MAX/MIN									•	•	•		
OR									•	•	•		
XOR									•	•	•		
mix							•		•		•		•
Pantograph			•				•			•			
Monochrome								•			•	•	•
Pattern		•			•								
edit					•								
Draw Thru[1]								•	•	•			

Notes:

[1] Draw Thru: Add the area from the spare screen beneath the brush to the current picture.

HAM Redux

WAITING IN THE wings is Aegis/Oxxi's SpectraColor. As a direct descendant of MicroIllusion's Photon Paint, it appears to be a thorough overhaul of that venerable paint program, adding such new features as ANIMbrushes, tweening, and brush paths across animation cels. Nevertheless, the Photon family resemblance was unmistakable in the prerelease version I saw.

ANIMbrushes are certainly the most welcome new feature to be found in SpectraColor. With this tool, artists can create composite animations using both background and brush cels. Although you cannot use the new tweening feature to automate authentic key-frame animation (the first and last frames must be from the same brush), all of the brush effects are active across all of the ANIMbrush's frames—making it indeed a powerful new tool. On-screen definition of brush paths is another useful innovation. Simply click the tool's icon and draw your path directly on the screen.

It apppears that a great deal of programming effort went into the new, improved animation mode; and ANIM playback control is much better. Unfortunately, ANIM creation and manipulation need further work. ANIMs are still assembled manually, frame-by-tedious-frame. Although the animation playback speed of uncompressed frames is impressive, I would like a compressed (ANIM) mode, too. In addition, perhaps the programmers might throw in real-time speed control before the final release.

Ultimately, SpectraColor is going to be more powerful than its predecessor, Photon Paint; the fact that it is building on the solid foundation of the earlier program is certainly an advantage. □

—GB

GVP Announces a Technological Breakthrough...

SERIES II™

THE NEXT GENERATION

in SCSI and RAM Controllers for the A2000®



IMPACT Series II

GVP's New SERIES II A2000 SCSI and RAM Expansion Controllers provide the ultimate hard disk and RAM expansion solution for the A2000. Choose from two new models:

The Series II A2000 SCSI "Hard-Disk + RAM-Card"

- **State-of-the-Art integration** packs a high performance SCSI controller, 8MB FAST RAM Expansion and a 3.5" hard disk drive INTO A SINGLE A2000 EXPANSION SLOT!! Saves BOTH a valuable expansion slot and a peripheral bay!
- **Incredible SCSI hard disk performance** achieved through GVP's innovative new custom chip design, which provides DMA performance and unique direct dual port memory access to FAST RAM, eliminating typical DMA side effects under heavy graphics load.
- **Easy-to-install SIMM memory modules** allow flexible memory configurations from ZERO through 8MB. Supports 6MB FAST RAM configuration for BridgeBoard users.
- **NEW *FAAASTROM*™ SCSI Driver** offers optimum performance and includes such features as:
  - ✓ Supports virtually any SCSI device including, CD-ROMs, Tape Drives, IOMEGA Bernoulli drives, etc.
  - ✓ Fully implements SCSI Disconnect/Reconnect protocol, allowing overlapping SCSI commands to be executed.
  - ✓ Fully implements Commodore's Rigid Disk Block (RDB) standard as well as the new DIRECT SCSI interface standard.
  - ✓ Removable media drive support. Automatically senses cartridge changes and informs AmigaDOS, ensuring safe and reliable use of removable media SCSI drives.
  - ✓ Allows Direct AUTOBOOT from Fast File System Partition.
- **New INTUITION COMPATIBLE SCSI installation** and "tuning" utility included. Major features include:
  - ✓ ICON and gadget based INTUITION interface.
  - ✓ Bad Block Remapping of hard drives.
  - ✓ Auto or manual hard drive partitioning and AmigaDOS formatting.
  - ✓ Read and modify existing RDB parameters on hard disk.
  - ✓ Simplest and Easiest SCSI installation in the industry.
- **Low parts count (through VLSI Integration) EQUALS:** lower power, higher reliability, longer life and ultimate PRICE/PERFORMANCE! See TRADE-UP offer.

The Series II A2000 SCSI "Hard-Disk-Card"

- **Same as above** but without the 8MB FAST RAM capability.
- **Specially designed** for those users who don't need memory expansion but still need maximum hard disk performance at a budget price.
- **UNBEATABLE VALUE.** See $99 trade-up offer!

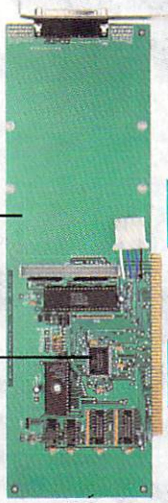
GVP's New *FAAASTROM* SCSI driver and installation software is also available as an upgrade kit for GVP's original IMPACT SCSI controllers, for ONLY $49.95. Offers major performance increase over previous GVP AUTOBOOT EPROMs.

New Series II 48MB Removable media hard disk drive. GVP now also offers the NEXT GENERATION removable media hard disk drive which offers increased capacity (48MB formatted) and major technological advances in cartridge air flow filtering design and robustness. Call for details.

Hard-Disk+RAM-Card



Hard-Disk-Card



SCSI TIMES 1990

The ULTIMATE Trade-Up Offer???

GVP today introduced its new Series II product line and announced a bold new trade-up program, which is certain to further bolster GVP's dominant market share in the Amiga hard drive market.

Details of GVP's new TRADE-UP program are as follows:

- For $109 plus $6 for shipping (USA only), end-users can trade-up to the new GVP Series II SCSI "Hard-Disk-Card" (without drive) by simply sending in their present SCSI controller (from ANY manufacturer) together with a money order or certified check, payable directly to GVP.
- All trade-in controllers must be sent to GVP FREIGHT PREPAID.
- Owners of any GVP or Commodore SCSI controllers, are eligible for an additional $10 rebate, if they trade-in a FULLY FUNCTIONAL and working controller. These owners need to submit a certified check/money order for $105 only.
- For an additional $39, existing controllers can be traded-up to the new Series II "Hard-Disk + RAM-Card," which includes the 8MB FAST RAM expansion capability, populated with ZERO RAM.

"Let's Standardize"

GVP

Educational pricing program now available.

Series II, FAAASTROM and GVP are trademarks of Great Valley Products, Inc. Amiga and A2000 are registered trademarks of Commodore-Amiga, Inc.

GREAT VALLEY PRODUCTS INC.
600 Clark Avenue, King of Prussia, PA 19406

For more information, or for nearest dealer, call today. Dealer inquiries welcome.

Tel. (215) 337-8770 • FAX (215) 337-9922

Dealers Circle 145 on Reader Service Card

Consumers Circle 62 on Reader Service Card

Table 7. Palette

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Max Colors	12	32	32	64	64	64	64	64	4096	4096	4096	16m	16m
Multiple Palettes	8			6						•	•		5
Copy		•	•	•	•	•	•	•	•	•	•	•	•
Swap		•				•		•		•	•	•	•
Spread													
rgb[1]		•	•	•	•	•	•	•	•	•	•	•	
hsv[2]				•						•	•		
Adjust Color													
rgb[1]		•	•	•	•	•	•	•	•	•	•	•	•
hsv[2]				•		•		•		•	•	•	•
Color Cycle	•	•	•	•	•	•	•	•					
number of ranges	1	32	4	6	1	6	6	6					
Efx Range						•		•	•				
Use brush						•		•			•		
Restore Last Palette		•				•				•			
Pick From Screen			•	•	•	•	•		•	•	•	•	•
Match/Remap	•			•		•			•	•		•	
Default Set					•	•	•	•	•	•	•		
Undo Changes		•		•	•	•	•	•	•		•		

NOTES:

[1] rgb: red, green, and blue.

[2] hsv: hue, saturation, and value.

Table 8. Print Options

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Use Preferences	•	•						•	•	•		•	
Aspect Ratio				•		•	•				•		
Color					•	•				•	•		
PostScript							•						
Page					•	•					•		
Brush				•	•		•				•		

From p. 29

ping, I must confess I have never been comfortable with the other major contender, **Photon Paint 2.0** (MicroIllusions). The poor implementation of animation features and the absence of ANIMbrush tools frustrate this ambitious effort.

A new version of the program, however, to be called **SpectraColor**, is being ramped up by another group, Oxxi/Aegis, for release in 1991. (See the sidebar "HAM Redux" for a look at a prerelease version.)

Best New Program

I was impressed by the care and consideration lavished on The Graphics Workshop. Patterned

Continued on p. 40

Check the fax. You'll choose a DataLink.™



Combine the raw power of your Amiga with the utility of a modem and the indispensable convenience of a fax machine - and you've got a DataLink Send-Fax™ modem from Applied Engineering.

Send faxes directly from your Amiga's screen* without ever printing a "hard copy" of the information. The exclusive AE Send-Fax™ software installs itself as a printer option in "Preferences". Faxes can then be sent as simply as printing. Or even easier with our programmable "Hot Key". Go back to what you were doing, while AE Send-Fax operates in the background, or watch progress in an unobtrusive window. You'll automatically receive a report when the fax is completed.

Compile your own fax-number phonebook for instantaneous dialing. Preview your faxes — even program AE Send-Fax to send faxes to entire distribution lists. And you can fax to lengthy distribution lists late at night, when rates are lowest. The next day a report confirms your faxes were received.

Best of all, AE Send-Fax comes with the finest modems you can buy — the DataLink series. 2400 bps modems that redefine the art of telecommunications by delivering unparalleled reliability and unmatched technical excellence.

The result? Standard features like complete communications software included free, full Hayes AT compatibility, asychronous data format, auto answer, non-volatile memory, automatic tone and pulse dialing, remote access, built-in diagnostics, FCC certified designs, free tech support, five year warranties and more. And upgradeability to MNP-5 with 4800 bps throughput speeds and error-free data transfer.

DataLink 2000™ (top) is an internal 2400 bps modem for A2000/3000 series machines. It can be configured with the MNP-5/Send-Fax package or either option individually. **DataLink Express™** (bottom) works externally with ALL personal computers and features another AE exclusive, our "Line Engaged" indicator to show a shared phone line is in use. The MNP-5 data compression and error correction option must be present on DataLink Express in order to include AE Send-Fax.

Order today! To order or for more information, see your dealer or call (214) 241-6060 today, 9 am to 11 pm, 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 8 ¼% sales tax. Add $10 outside U.S.A.

DataLink 2000 .... **$159**
w/MNP-5 .... **$189**
AE Send-Fax™ option **$39**
DataLink Express **$249**
w/MNP-5 .... **$299**
w/MNP-5 and AE Send-Fax **$349**
AE Send-Fax (field upgrade requires MNP-5) **$79**

*REQUIRES KICKSTART VERSION 1.3 OR LATER

Applied Engineering®
The enhancement experts.
A Division of AE Research Corporation
(214) 241-6060

P.O. Box 5100
Carrollton, TX 75001

Made IN THE USA

Table 9. Animation

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Method													
page flip						•		•		•			
ANIM						•		•					
Set Rate						•		•		•			
interactive						•		•		•			
Save Range of Frames						•				•			
Playback													
step fwd/rvs						•		•		•			
goto frame						•				•			
reverse						•		•		•			
ping-pong[1]						•		•					
play range						•				•			
ANIMbrushes						•							
Frames													
append						•		•		•			
insert										•			
delete						•		•		•			
range						•		•					
new						•		•					
range						•		•					
copy						•		•		•			
swap								•		•			
merge								•		•			
Set Brush Path						•		•					

NOTES:

[1] Playback/ping-pong: Play forward, then backward. May repeat.

Table 10. File Formats.

PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
IFF													
ILBM	•	•	•	•	•	•	•	•	•	•	•	•	•
ANIM						•		•		•			
ANIMbrush						•		•					
brush			•	•	•	•	•	•	•	•	•		•
RGB												•	•
Icon Files				•			•						
PostScript							•						
Alien Formats													•
Palettes			•	•			•				•		
Load/Save at X/Y											•		

Table 11. Effects

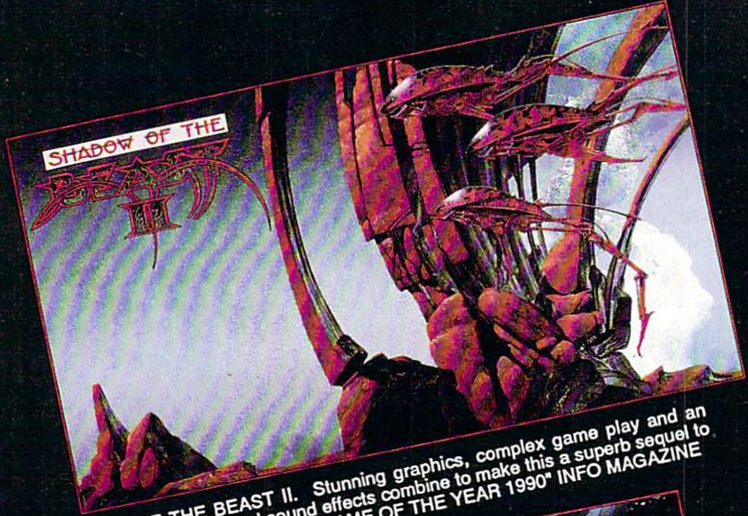
PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Mirror/Symmetry	•	•	•		•	•	•					•	
Outline		•			•	•		•			•		
Trim						•							
Stencil													
color		•	•			•		•				•	
area													
rectangle						•	•	•		•			
freehand						•	•						
background						•		•		•			
foreground						•							
Magnify													
levels		3	1	2	1	22	1	3	1	23	50	1	1
resize window			•					•	•	•			
visible main screen		•	•	•		•		•	•	•	•		
scroll				•		•	•		•	•	•	•	
all tools functional			•			•			•	•	•		
Grid[1]		•	•			•		•		•		•	•
Flip Screen x/y						•						•	
Undo Levels	1	1	1	r	1	1	r	1	1	1	1		1
Keep Aspect Ratio			•			•	•			•			
Repeat Last Action		•							•		•		
Repeat Last Menu						•					•		
Mosaic				•						•	•		
Tiles			•			•			•		•		•
ARexx Interface									•			•	

NOTES:

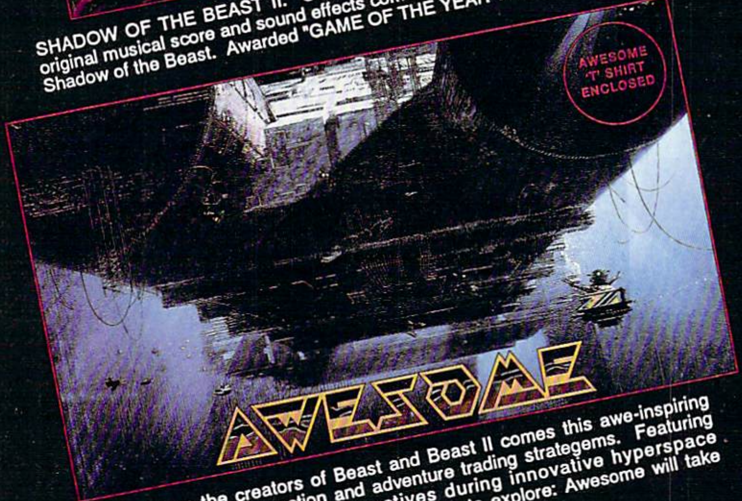
[1] Grid: Invisible

Table 12. Text Handling

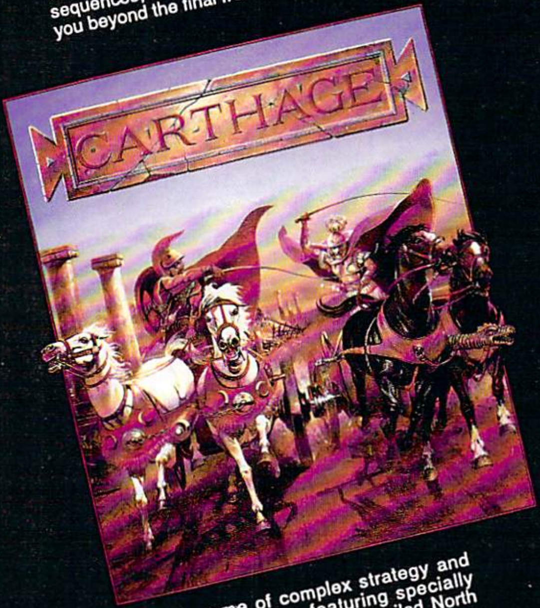
PROGRAMS	My Paint	Graphics Studio	Images	Spritz	Chroma Paint	DPaint	Express Paint	Graphics Workshop	Digi-Paint	Photon Paint	Deluxe PhotoLab	Macro Paint	Mega Paint
Method													
on-screen			•			•		•		•	•		
type & place		•		•	•		•		•			•	
from file							•						
Any Directory						•			•	•	•	•	
Smoothing									•				
Shadows										•			
Edit		•		•	•	•	•	•	•	•	•	•	
Formatting							•						
ColorFonts				•		•	•			•		•	



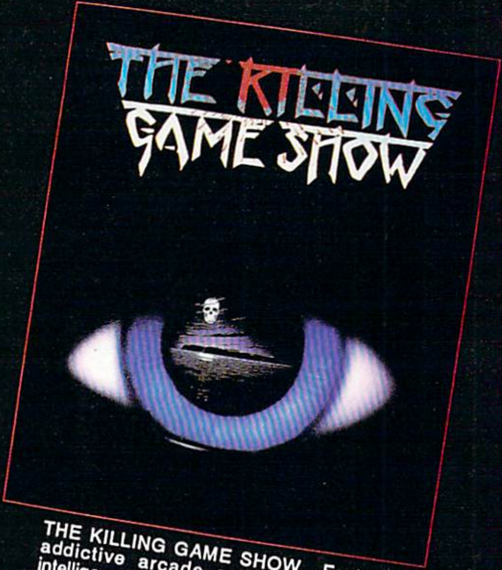
SHADOW OF THE BEAST II. Stunning graphics, complex game play and an original musical score and sound effects combine to make this a superb sequel to Shadow of the Beast. Awarded "GAME OF THE YEAR 1990" INFO MAGAZINE



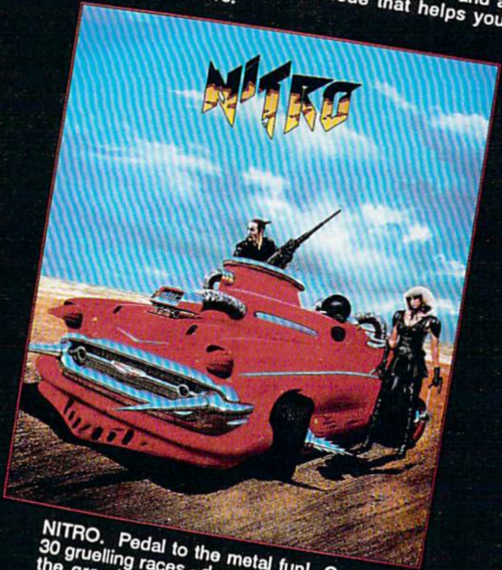
AWESOME. From the creators of Beast and Beast II comes this awe-inspiring combination of shoot-em-up action and adventure trading strategems. Featuring varying first and third person perspectives during innovative hyperspace sequences, full-screen aliens and a whole galaxy to explore: Awesome will take you beyond the final frontier.



CARTHAGE. A game of complex strategy and breath taking arcade action featuring specially designed 3D graphics. Survey the detailed North African landscape and zoom in to deploy your troops. Decide which of your armies needs a cash injection then grab the reins for a mind boggling chariot race to deliver the money. Carthage will give you a taste of history so real you can almost smell the elephants.



THE KILLING GAME SHOW. Fast, really fast, addictive arcade action requiring skill and intelligence to battle your way through the 16 Pits of Death infested with hostile Artificial Life Forms. Features dazzling graphics, original music and a specially designed re-play mode that helps you improve your score.



NITRO. Pedal to the metal fun! Compete in over 30 gruelling races - day and night earning points for the grand championship. Speed through cities, deserts, forests and wastelands. Pop in to the shop to modify and soup up your machine. Race against the computer or against two other competitors.



SPELLBOUND. You embark on a perilous mission of arcade action and adventure through eight diverse and dangerous domains collecting spells and objects while battling against deadly adversaries. You can even take a friend along to improve your chances and double the fun.

PSYGNOSIS

PSYGNOSIS
29 Saint Mary's Court
Brookline, MA 02146
Telephone: (617) 731-3553

Circle 311 on Reader Service card.

S E E I N G I S B E L I E V I N G

From p. 34

closely on DeluxePaint, the software accommodates cel animation and as many as ten ANIMbrushes, all moving on the same screen. Simply set the paths of the brushes with DPaint-like Move requesters and then select Render to see the results. An improved palette tool and a comprehensive set of color-transformation functions round out this powerful package. I will use it for many of my future projects. ■

Gene Brawn is a digital animator, graphics designer and frequent lecturer, as well as a contributing editor to AmigaWorld. *Write to him c/o* AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Manufacturers' Addresses

Accolade
550 S. Winchester Blvd., Suite 200
San Jose, CA 85128
408/985-1700

Centaur
4451-B Redondo Beach Blvd.
Lawndale, CA 90260
213/542-2226

Designing Minds
3006 N. Main
Logan, UT 84321
801/752-2500

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171
800/245-4525

HoloSoft Technologies
1637 E. Valley Parkway, Suite 172
Escondido, CA 92027
619/747-0663

Lake Forest Logic
28101 Ballard Rd., Unit E
Lake Forest, IL 60045
708/816-6666

MicroIllusions
PO Box 3475
Granada Hills, CA 91394
818/785-7345

NewTek
215 S.E. 8th St.
Topeka, KS 66603
913/354-1146
800/843-8934

Oxxi
PO Box 90309
Long Beach, CA 90809
213/427-1227

Pseudo Vision
9319 E. Main St.
Spokane, WA 99206
509/926-6623

AMIGA PROFILE

Behind the Portrait

READERS OF LAST month's issue may have been wondering who the "Artist" was in the opening of our "Portrait" article (see "A Portrait of the Artist as a Small Business," p. 54, Dec. '90). Well, here's another chance (inset)—which may cause some of of you to recognize award-winning Amiga artist Sandra Filippucci.

We certainly didn't have to sweet-talk Sandra on the virtues of the Amiga in order to get her to pose for the photo. She's sold on it—and has been for five years. Even when she struggled with it at first, she was always excited by the Amiga and driven by its possibilities.



When Commodore "discovered" her, the company jumped in with product support and technical assistance. She now does the majority of her artwork on the Amiga. Currently, she is segueing from illustration work to large-scale archival corporate installations, for which she produces works in sizes up to 10 × 14 feet. Among Sandra's most recent accomplishments is the fact that an international jury of experts placed her entry among the 15 best works in the computer-graphics category (which had 738 entries from 24 countries) in the Prix Ars Electronica '90 competition in Linz, Austria.

Sandra's success keeps her busy; her calendar is booked up sometimes a year in advance. She is now, for example, gearing up for a one-person show at the Museum of American Illustration in New York City that will run October 2–November 1, 1991. Commodore is underwriting the cost for the poster to promote this exhibit. It's no wonder; not only is all her hardcopy work produced with an A2500/30, but an Amiga will be set up at the show to run animations that Sandra is creating now. Between now and then, she will be showing her work at California's first—and so far only—computer-graphics gallery, the Verbum Gallery in San Diego. That show runs January 1–March 8, 1991.

Although Sandra uses the ProWrite word-processing program for business communications, she—like the intended reader of the "Portrait" article—hadn't really considered using her Amiga for the business side of her creative enterprise. While she may be lucky enough to have outside assistance in looking after her far-flung financial interests, Sandra is beginning to see how her Amiga can help her out directly. In fact, she plans to start doing her taxes on the Amiga—when she can find a few spare moments!

—Barbara Gefvert



The Portrait "Process"

Image processing is a powerful tool that can add significantly to your repertoire of graphics techniques—as this portrait tutorial will show.

By Joel Hagen

ALTHOUGH MANY AMIGA users have a keen interest in computer graphics, some lack the rendering skills to paint satisfying images. For artists and nonartists alike, experimenting with image processing can yield dramatic color portraits even from black-and-white digitized photographs. Your results can stand alone, or you can use them as starting points for further work within any paint program.

The primary tool for all operations described in this article is PIXmate ($49.95, Progressive Peripherals). I am surprised by the number of Amiga artists who own PIXmate but use it only for converting HAM images to 32-color mode or for resizing an image. While most are aware of its image-processing and color options, few have really explored them as tools in their artwork.



Image processing is an outgrowth of imaging methods developed in the fields of space exploration and medicine, where enhancement of certain details aids in the interpretation of data. A variety of computational operations is performed on an image, pixel by pixel, based on the value of the individual pixel and its neighbors and on the constraints of the particular algorithm used.

Typical operations might enhance edges, boost contrast, increase sharpness, or blur or merge images. The computer artist can effectively employ all of these operations based on esthetic decisions alone. Thousands of combinations of processes are possible with a program like PIXmate. For our purposes here, I will concentrate on a few concepts that may be used as foundations for further experimentation.

Keeping It Simple

I began the series of image-processed portraits shown here with a 320 × 200 digitized black-and-white photograph of a friend, Jaida (Figure 1), who is a San Francisco Bay Area writer and traveler. Because of the focus of this article, I determined to rely as much as possible on the image processor alone to alter, color, and finish the portraits. My loose goals were to produce color portraits that departed significantly from the look of the original photo and brought out ►

something of the personality of the subject. I chose to seek processing sequences that approximated computationally some of the creative choices I might have made with paint.

To ensure that all of PIXmate's operations worked effectively, I first sorted the palette, low to high, under the Color menu. To increase detail at subsequent stages, I reformatted the image to 320×400, the maximum nonoverscan HAM resolution. I intended much of my final work to be in HAM for the sake of achieving increased subtleties of color variation.

I began by breaking up the highly dithered photo into more simplified value shapes. With the c key, I copied the image to a spare screen, allowing me to make the original image available for comparison with any processed versions that I might later have on my current screen. Using the f key, I was able subsequently to flip back and forth between screens.



Figure 1. A digitized black-and-white photo of the subject before any image-processing techniques are applied.

With the i key, I then brought up the image-processing tools. During the early stages, I left the logic controls set to NOP (no operation).

My first move was to soften the image using AVG, the averaging-pixel process. PIXmate focuses on a three-by-three matrix around each pixel and totals the values of those nine pixels. Dividing by nine yields an average value that replaces the value of the center pixel. The process is then repeated for every pixel throughout the entire image. The result is a softened version of the original, with the dithering reduced or eliminated.

I wanted the image to be even more broken up into large value shapes, so I selected MF2, a median filter-pixel process. In this operation, the program samples a five-by-five matrix and replaces the value of the center pixel with the median value of the 25 pixels. The effect is similar to averaging, but tends to preserve detail better.

When the operation was finished, I closed the Image tool box by pressing the Return key in order to view the results. With the u key (the Undo function), I could toggle back and forth between the averaged image and the average-plus-median version. In addition, with the f key I was able to toggle back and forth between either version and the original on the spare screen. (PIXmate's Undo is one of the most useful I have seen—I can even save an image between undos.) I now had three potential versions of the image instantly available at a keystroke.

I liked the look of the picture broken up into simple value shapes (Figure 2, left). To color it, I avoided the built-in "pseudo" color option in the menu—which offers little opportunity for variation and is more suited to technical, not creative, work—and instead brought up the palette control with the p key. I raised the Blue slider on the darkest hue a few notches to give it some color. Moving up four or five colors, I altered the RGB sliders of the gray value to produce another color.

To preserve the approximate value of the color position, leave one slider in place as a marker, move one of the remaining sliders up a notch or two and the other down a notch or two. In this fashion, you can create a color every four or five positions up the palette and then use Spread to create the intermediates between each set of extremes. The resulting 16-color image (Figure 2, right) is an example of a quick process producing a finished portrait. It will also load into any paint program for further work.

OPERATION MERGER

For my next experiment, I used the menu's Merge RGB to HAM feature with three separate images to produce a final color composite. For the first, I performed a simple red extraction of the original photo and saved it (Figure 3, left). All extraction choices are available under the Color menu.

For the second image, I used the gray-scale, average/median version of the previous portrait, with some of the dark values cut out. I accomplished this with the image-processing tools by using THR, the threshold-pixel process, with Threshold set at 8. Performing a green extraction of this image. I took it into DeluxePaint ($149.95, Electronic Arts) for touch-up, removing the eye detail and filling some areas before the final save as a 16-color image (Figure 3, center).For the remaining blue image, I again took the average/median gray version, but performed an EDG matrix operation on it. This is a Sobel edge-detection process that leaves only outlines of shapes. I used the * kernal, which leaves the strongest outlines, responding to linearities in any direction. The process leaves light lines on a dark background. To reverse this, I set the Logic operation, EOR (exclusive-or), and clicked the Logic gadget. Doing this causes a modified exclusive-or operation to produce a negative image. By performing a blue extraction ►

THE EXTERNAL WORLD OF AMIGA

ROCTEC

ROCTEC ELECTRONICS INC.
170 Knowles Drive, Suite 202
Los Gatos, CA 95030
U. S. A.
Tel: 408 379 1713
Fax: 408 379 1897

For more information or the nearest dealer, please call us now.

RocGen



- Dissolve Control
- Auto Video Pass-Through
- External/ Internal Power Selection
- RS-170A Composite Output
- Compact & Sturdy Metal Casing

Drives Series



3.5" 880 KB
Compact Floppy
- Daisy Chain Function
- ON/OFF Switch
- No Clicking

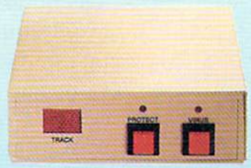


5.25" 360/880 KB
Switchable Floppy
- 40/80 Track Switchable
- Compatible with PC-1



3.5" 880 KB
Ultra-Slim Floppy
- 0.75" Super Slim Mechanism
- Low Power
- Extremely Quiet

Roc Knight

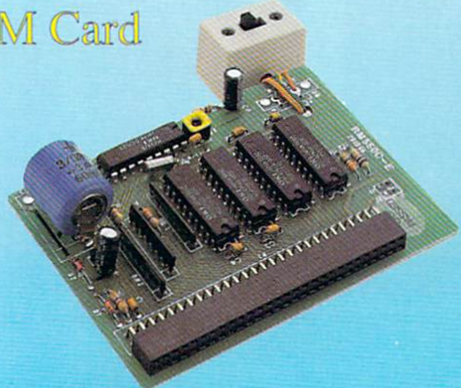


- Track Zero Write-Inhibit
- Track Location Display
- Disk Write Protect Function
- Virus Prevention

Mouse



RAM Card



- 512KB RAM for A500 Computer
- Real Time Clock & Calendar
- External ON/OFF Switch

1.8 MB RAM Expansion Available

RocGen and Roc Knight are not offered to sell in U.S.A. until certification from FCC is awarded.

Circle 45 on Reader Service card.

Amiga is a registered trademark of Commodore, Inc.

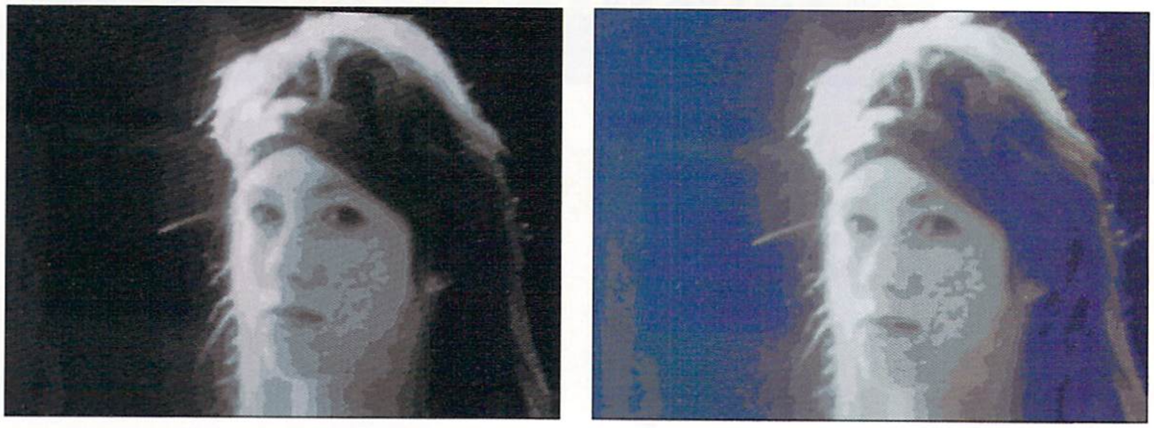


Figure 2. After breaking up the photo into more simplified value shapes (left), it can be quickly turned into a 16-color image (right).

of this, I got the final image—dark outlines on blue (Figure 3, right)—for my merge.

After loading the red image, I selected Merge RGB to HAM from the menu and was prompted to load the next two images. PIXmate then produced the composite image shown in Figure 4. The light eyes in the portrait worked pretty much as I had anticipated. Had I not removed the eyes from the green plane with the paint program, they would have appeared quite dark in the final merge. I like the look of this portrait. The outlines add a strong graphic element to the composition. I also feel that the light eyes convey something of Jaida's character. In a portrait, that should certainly be part of the goal.

ON TO NEW EXPERIMENTS

The outlines intrigued me so much that I could not avoid a quick side experiment to turn it into a "paint-by-number" piece. I used EOR and the Logic gadget to negate the HAM image, thus producing vibrant colors. I reduced that image to 32 colors and saved it. Wanting black outlines to finish the image, I took the blue-line image I already had, selected LAP (the Laplace operation, which emphasizes edges), and used the * kernal to emphasize the dark lines. I then proceeded to set Threshold to 4 and performed a binary operation, BIN, which produced a high-contrast, two-color (black-on-white) image of lines.

Using DPaint, I loaded the 32-color portrait to one screen and the lines to the other. I then brought back the color with Restore Palette. I picked up the lines as a full-screen brush, pressed the j key to flip to the other screen, and placed them on the image. While I found the result to be fun and colorful, it was a little difficult to recognize the person, and I decided to scrap that image from the series of illustrations presented here.

I returned to the previous picture for ideas on how to bring more character to the portrait. I liked the way the simplified green plane emphasized the light direction on the subject, so I decided to play that for a more dramatic effect. Returning to the gray average-plus-median image, I made a slight adjustment to the threshold slider and again used the binary operation, BIN. The result was a clean, bright shape of the highlights against a black background. This became my green image.

The red image was more complex. Using the method described earlier, I created a merged composite by combining one plane of the processed photo with two planes of a HAM abstract painting I had already completed (and which, in fact, is the illustration accompanying this month's "Accent on Graphics"—see p. 60 for more on how it was created). I ►

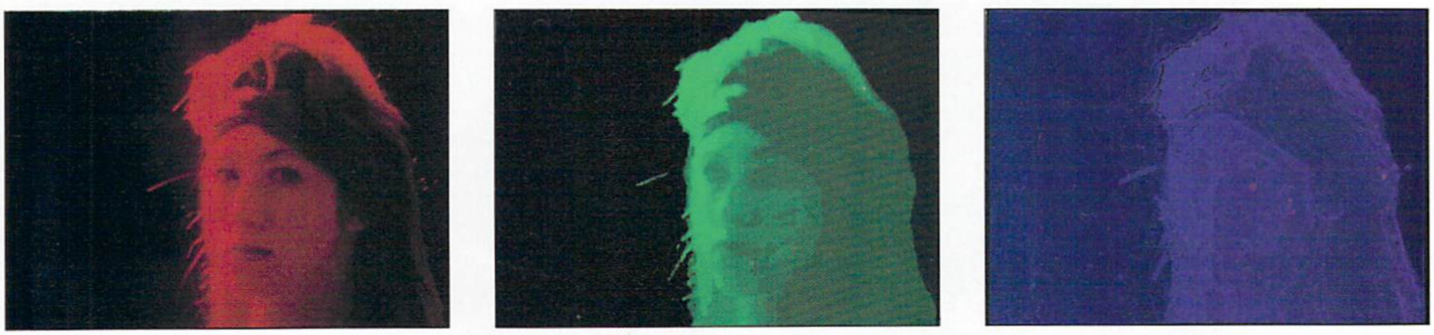
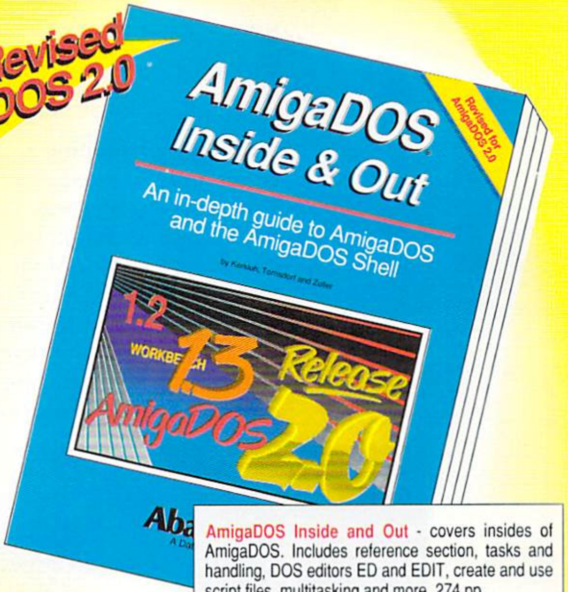


Figure 3. Three separate images (red, left; green, center; blue, right) are manipulated, each by a different processing technique, to prepare for the color-composite image.

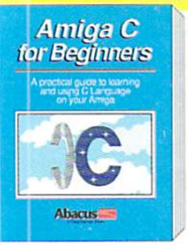
Amiga Know How

with books from Abacus

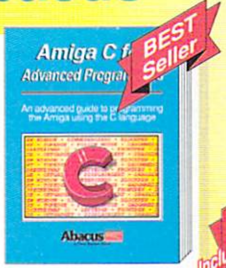
New • Revised for AmigaDOS 2.0



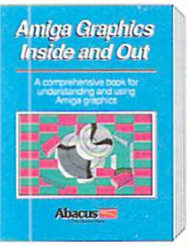
AmigaDOS Inside and Out - covers insides of AmigaDOS. Includes reference section, tasks and handling, DOS editors ED and EDIT, create and use script files, multitasking and more. 274 pp
ISBN 1-55755-041-7 Suggested retail price $19.95



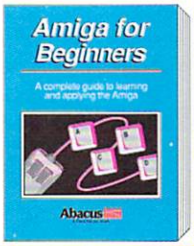
C for Beginners - Introduction to learning the C language. Explains the elementary concepts using many examples. Describes C library routines, how the compiler works, many programming examples. 284 pp
ISBN 1-55755-045-X Suggested retail price $19.95



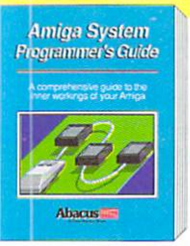
C for Advanced Programmers - Learn: how compilers, assemblers and linkers work, using Intuition, combining assembly language and C programs, using jump tables and dynamic arrays, designing and more. Includes complete source code for a C based text editor. 650 pp
ISBN 1-55755-046-8 Suggested retail price $34.95



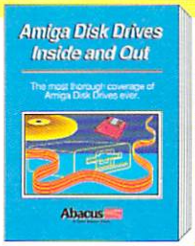
Graphics Inside & Out - Graphic programming in C with examples of points, lines, rectangles, polygons, colors, more. Complete description of the graphic system - View, ViewPort, RastPort, bit-maps, screens & windows. 610 pp
ISBN 1-55755-052-2 Suggested retail price $34.95



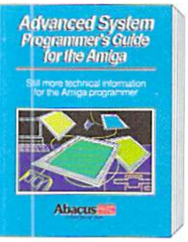
Amiga for Beginners - a practical guide to learning the Amiga. Helps you learn the essentials of the Amiga easily and quickly; from opening the box to your first practical application. Introduces you to Intuition, the mouse, windows, the CLI and AmigaBASIC. *Covers Workbench 1.3 Info.* 178 pp
ISBN 1-55755-021-2 Suggested retail price $16.95



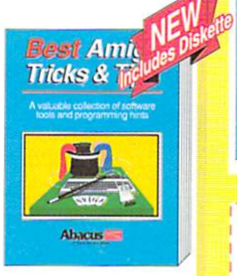
System Programmer's Guide - comprehensive guide to what goes on inside the Amiga. Includes EXEC structure, I/O requests, interrupts and resource management, multitasking, IFF format, trackdisk, Console & Narrator devices, serial, printer and parallel devices, more. 442 pp
ISBN 1-55755-034-4 Suggested retail price $34.95



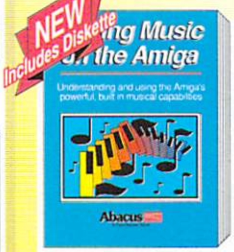
Disk Drives Inside and Out - most comprehensive book yet- all you need to know about Amiga disk drives. Speed up data transfer, how copy protection works, how viruses infect systems, DOS functions, loading, saving sequential and random files, boot blocks and more. 346 pp
ISBN 1-55755-042-5 Suggested retail price $29.95



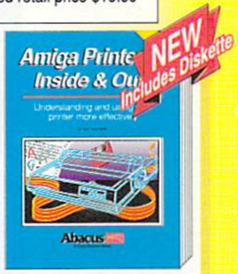
Advanced System Programmer's Guide - follow-up volume with explanations to accessing facilities provided by the libraries, input and output of Amiga programming hardware, EXEC structures, multitasking; more. *Covers Workbench 1.3 Info.* 570 pp
ISBN 1-55755-047-6 Suggested retail price $34.95



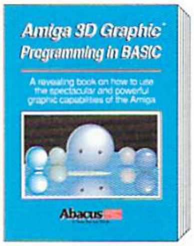
Best of Amiga Tricks & Tips - Easy to use techniques for all Amiga owners. Accessing libraries from BASIC, custom character sets. AmigaDOS, sound, important 68000 memory locations, hidden messages, disabling fast RAM, NewCon and Pipe devices much more. Replaces Tricks & Tips and More Tricks & Tips. 400 pages with companion disk.
ISBN 1-55755-107-3 Suggested retail price. $29.95.



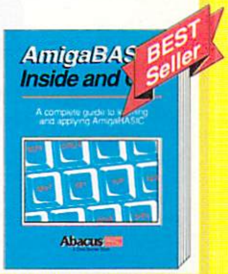
Making Music on the Amiga - Shows you how to take advantage of the wonderful musical capabilities of the Amiga with programs and examples including making your own MIDI interface. Includes companion diskette containing dozens of music examples and utilities.
ISBN 1-55755-094-8. Suggested retail price $34.95



Amiga Printers Inside & Out - essential guide to getting the most using Epson and compatible non-laser printers. Presents easy to follow examples and simple explanations to utilize your printer quickly and more effectively. 270 pp, with companion diskette.
ISBN 1-55755-087-5. Suggested retail price $34.95



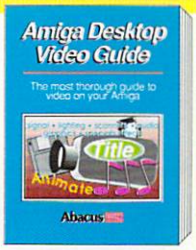
3DGraphic Programming in BASIC - details writing 3D graphic programs: ray tracing in all resolutions, light sources and shading and more. 360 pp
ISBN 1-55755-044-1 Suggested retail price $19.95



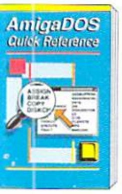
AmigaBASIC Inside and Out - step-by-step guide to AmigaBASIC. Every AmigaBASIC topic: charts, windows, pulldown menus, files, mouse & speech commands. *Covers Workbench 1.3 Info.* 548 pp
ISBN 0-916439-87-9 Suggested retail price $24.95



Machine Language - comprehensive introduction to 68000 assembler ML programming, covers 68000 microprocessor, speech, sound, menu programming, complete intuition program including Proportional, Boolean and String gadgets. 264 pp
ISBN 1-55755-025-5 Suggested retail price $19.95



Desktop Video Guide - clearly explains how you can harness the video power of the Amiga. Guides you through the confusing jargon and terminology to give you a practical introduction to video production and more. 240 pp
ISBN 1-55755-057-3 Suggested retail price $19.95



AmigaDOS Quick Reference Guide - An invaluable, easy-to-use reference tool for beginners and advanced programmers alike. You can quickly find commands by using the three handy indexes designed with the user in mind. Commands in alphabetical order for easy reference. *Covers Workbench 1.3 Info.* 128 pp ISBN 1-55755-049-2 Suggested retail price $9.95

Companion Diskette - Available for all titles except Amiga for Beginners, Desktop Video and AmigaDOS Quick Reference. $14.95 each

For immediate shipment Order Toll Free 1-800-451-4319 EXT1212 or FAX (616) 698-0325

❑ **Yes**, please rush the following items ❑ **Yes**, please rush your Amiga catalog

Apply to my ❑ Visa ❑ Master Card ❑ American Express / ❑ I have enclosed a check / money order

$4.00 Shipping & Handling (U.S. & Canada) — $12.00 per book (Foreign orders)

Card # ______________________ Expires ________

Signature ______________________

Name ______________________

Address ______________________

City ______________ State ______ Zip ________

Items ______________________

Subtotal ________

Total ________

Abacus
Dept. L12, 5370 52nd Street SE
Grand Rapids, MI 49512
Phone 616-698-0330
Fax 616-698-0325

Circle 224 on Reader Service card.

See your local bookseller or

Order Toll Free in US & Canada 1-800-451-4319 Ext. 1212

reduced the resulting composite from HAM to 32 colors and did a red extraction.

The blue image was simply an extraction of the original photo for detail. I then merged all three images into one HAM image for the final portrait in the series (see the illustration on the opening page of the article). I like the abstract elements composited with the photographic detail. The serendipity of some of the light lines crossing the face was a fortunate surprise. The high-contrast green plane worked as I



Figure 4. Through its Merge RGB to HAM feature, PIXmate produced this color-composite image of the subject.

imagined, creating a strong sense of light and again conveying character appropriate to the subject and her martial-arts background.

AND THAT'S ONLY THE BEGINNING!

My experiments represent only a very few of the many directions you can take with the image processor in working on a portrait. I find that photographs with a strongly defined light direction work best. Clearly defined areas of light and shadow create drama when they are emphasized.

As a painter, I find it revealing to explore the kind of image simplification outlined in the beginning of this article. The shapes of shadow and highlight areas on a face or figure are easier to see when they are averaged or emphasized by a median-filter operation. The process may prove instructive to anyone exploring portraiture and life drawing. The shape of light and shadow can be further emphasized by reducing the number of colors to eight, four, or two values. Then you can decide which value levels convey significant information to the eye and which can be eliminated or simplified.

In compositing red, green, and blue images, DeluxePaint is the handiest tool for manual touch-up and image alteration, as the images need to be nonHAM for merging. Also, the program lends itself to simplified color schemes and to high-resolution output at 640 × 400 pixels. For other kinds of "painterly" effects—such as transparency, subtle ranges of color, image "rub-through," and warping—I have found Digi-Paint 3 ($99.95, NewTek) to be a powerful and easy-to-use program. I also use Photon Paint ($149, MicroIllusions) and Deluxe PhotoLab (now being bundled with DeluxeVideo III, $149.95, Electronic Arts). Each program has its strengths, and when they are used in concert, it is difficult to imagine an effect that cannot be achieved.

If hardcopy, not a screen image, is the final goal of your portrait work, there are a couple of tricks that may help you. Large photographic prints of the screen are very effective final formats for portraits. If you shoot the photo of the screen yourself, you should experiment with unfocusing the lens a bit to infuse a slight blur into the pixels. Always work with an interlaced image for increased detail and to avoid black scan lines.

If you want a color printout, the HP PaintJet does a good job for a reasonable price. Otherwise, I recommend the "Posters" program within Deluxe PhotoLab for basic printout. Using Posters, you can produce large, tiled images. Posters even has an excellent smoothing option for eliminating the blown-up-pixel look from the final tiled print. Although using this feature means it will take a long time to process the image, the results are often well worth the wait.

While image-processing may not actually make you a better painter per se, it certainly can help you produce better paintings and portraits. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. He is also Amiga-World*'s "Accent on Graphics" columnist. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a SASE for reply.*

Manufacturers' Addresses

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
415/571-7171

MicroIllusions
17408 Chatsworth St.
Grenada Hills, CA 91344
818/785-7345

NewTek
215 East 8th St.
Topeka, KS 66603
913/354-1146

Progressive Peripherals & Software
464 Kalamath St.
Denver, CO 80204
303/825-4144



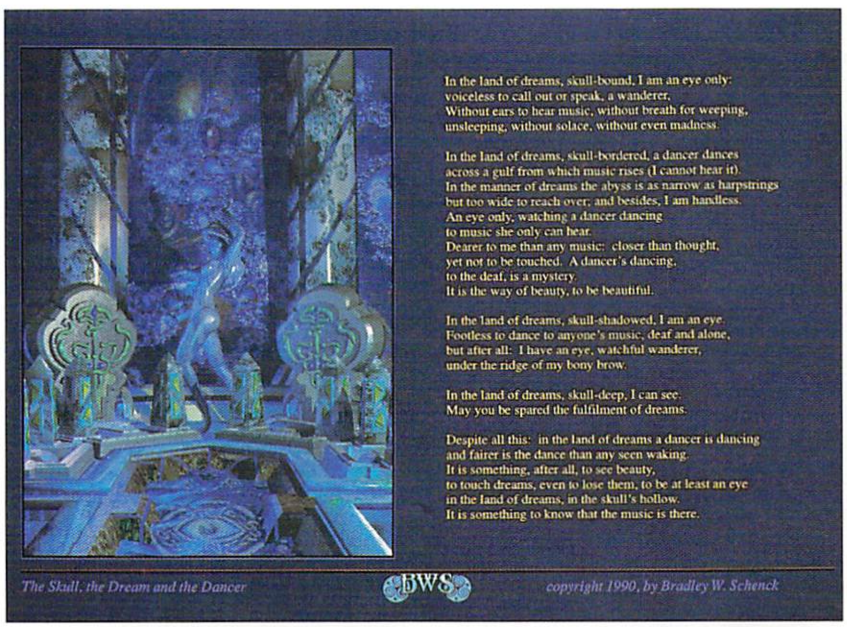
Slide into Print

Making slides from your screen images and then color-separating them may well be the key to achieving better-quality printed output.

By Bradley W. Schenck

WITH ALL THE exciting developments in Amiga video production, it's easy to forget that there's more to life—and to computer graphics—than NTSC video. As seductive as rotating reflective teapots and flying logos are, you need not look far to see that the world still turns on paper. Magazines, newspapers, and advertising brochures have not given way to a paperless society. As an artist first and a computer artist second, you want your work to be viewed and shared by as wide an audience as possible.

In many cases, you can apply the same tools used in real-time animation and video work to the print medium. Printing can make full use of 24-bit color and very high resolution, and, as a bonus, images for print do not suffer the degradation inherent in conversion to video. Also, because printed images are not limited to screen size as are video and Amiga-displayed pictures, you can create very large bit-mapped graphics to achieve higher resolution in the final output.



I take my work to print through slides made by a film recorder. A slide can reproduce computer art in very high resolutions, and from it, you can send the work virtually anywhere. As an example, I will show you how I combined a large, ray-traced bitmapped image with structured graphics and text. Hammond Photographic Services prepared a slide of this work using Professional Page ($395, Gold Disk) through color PostScript at 4000 lines of resolution. From there, I had traditional color separations made for process printing. (The opening illustration for this article is produced from this slide.)

Although traditional color separation is more expensive to produce, I rely on it because digital color separation does not measure up. Still, you can use the techniques outlined here to produce digital separations for very affordable process color printing.

How To Get the Big Picture

I created a very large image for this project using Turbo Silver SV ($199.95, Impulse). Silver limits its output to standard Amiga screen sizes, including overscan, so I chose a hi-res overscanned format (704 × 480) in 24-bit color for rendering. I could have ►

rendered the image in 12-bit color (Professional Page 1.3 does not support the IFF 24-bit image format), but I found that my processed image benefitted from its 24-bit origins. Also, while you can use this process for 2-D graphics, very large screen sizes (with which we can take greatest advantage of the high-resolution film recorders) are best suited to 3-D applications. Generating a large image is easier than painting on such a large scale.

I conceived this image as an illustration for a poem that describes the artistic experience as a sort of waking dream state that is more vital and inherently true than the works it inspires. I wanted the picture to echo the dream imagery in the text and evoke a sensation of its symbolic power.

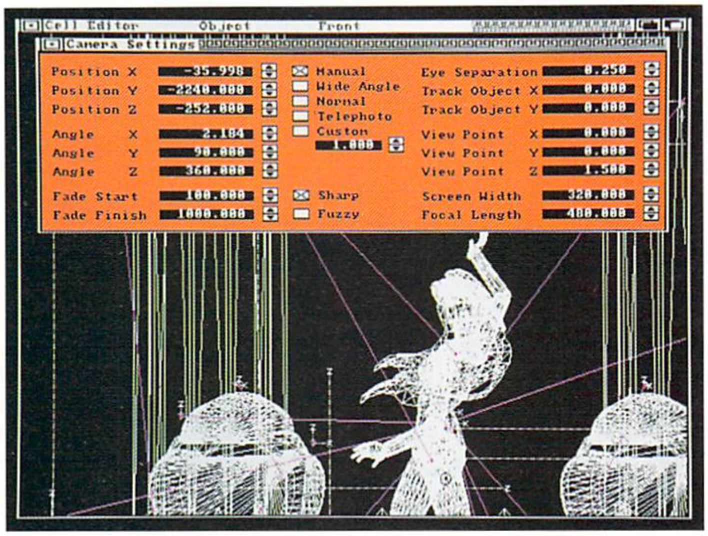


Figure 1. The image in progress in Turbo Silver. Note that the Angle Y setting in the Camera panel is at +90; this rotates the camera 90 degrees. It would have been simpler in the long run to set it at −90.



Figure 2. The rendered image, converted to a large interlaced HAM picture, has now been moved into Deluxe PhotoLab for retouching. This is as much of the large HAM picture as fits on a single screen.

I worked from a thumbnail sketch of my idea, using Silver's Object Editor to build the elements of the scene. I used several of Silver's volumetric textures and a number of IFF image wraps to achieve the rich, mythic atmosphere.

Because I wanted the final image to have a vertical aspect (that is, a height greater than its width), I rotated Silver's camera by 90 degrees. This meant that the image would be rendered sideways (see the Angle Y value in the Camera Settings panel in Figure 1). Had I been clever enough to rotate the camera in the opposite direction, I could have avoided flipping the image once I had rotated it. While working on the picture, I rendered it in interlaced HAM so I would be able to see the entire image on screen.

Having laid out the scene to my liking, I rendered the final tests in high resolution with 24-bit color. I used The Art Department ($89.95, ASDG) to translate these 768 × 480 images to HAM screens that were so large (roughly four normal HAM screens in size) that I had to scroll around to view them. At this magnitude, any HAM fringing or other effects are about half as visible as they ordinarily are. You must envision the picture reduced to single-screen size to appreciate how much crisper it is than a normal HAM image. Just imagine a high-resolution HAM screen (genuine HAM, not the rather limited Dynamic HiRes or ARes) with overscan: The pixels are the same size as normal hi-res pixels, but many more colors are present.

This particular image took about 11½ hours to ray trace on my seven-megabyte, 68030-based system, and it ate up almost all the memory in the process. (I have not often run out of memory at seven megabytes, but I figured out long ago that if I were not running out of RAM, I wasn't trying hard enough.)

SPIN, SQUASH, STRETCH, AND SCALE

Once the rendering was complete, I loaded the 24-bit, Impulse-format file into The Art Department (TAD). Before I did, however, I set TAD's Orientation button to Landscape, so that the ray-traced picture automatically rotated 270 degrees (or −90 degrees) as it loaded. I then used TAD's horizontal and vertical Flip buttons to complete a +90-degree rotation. (As mentioned before, I could have avoided flipping the image by rotating Silver's camera by −90 degrees instead of +90.)

At this point, TAD was handling the 24-bit, ray-traced image in a size of 480 × 768 pixels. That's because my overscanned original was 768 × 480 pixels before being rotated. If Amiga pixels were square, rotating the image this way would not change its aspect ratio. Its pixels are rectangular, however, so rotating a picture gives it a squashed appearance.

A square pixel has an aspect ratio of 1:1, that is, it is exactly as wide as it is tall. Amiga pixels, in both lo- and hi-res, have an aspect ratio of 1:1.16, meaning ►

CHARTER OFFER

A source of technical information for the serious Amiga professional.

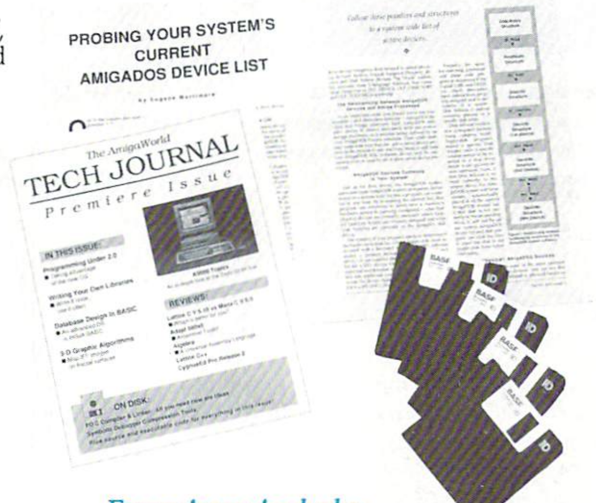
Introducing *The AmigaWorld Tech Journal,* the new source to turn to for the advanced technical information you crave.

Whether you're a programmer or a developer of software or hardware, you simply can't find a more useful publication than this. Each big, bi-monthly issue is packed with fresh, authoritative strategies and advice to help you fuel the power of your computing.

Trying to get better results from your BASIC compiler? Looking for good Public Domain programming tools on the networks and bulletin boards? Like to keep current on Commodore's new standards? Want to dig deeper into your operating system and even write your own libraries? Then *The AmigaWorld Tech Journal* is for you!

Our authors are programmers themselves, seasoned professionals who rank among the Amiga community's foremost experts. You'll benefit from their knowledge and insight on C, BASIC, Assembly, Modula-2, ARexx and the operating system—in addition to advanced video, MIDI, speech and lots more.

Sure, other programming publications may include *some* technical information, but none devote *every single page* to heavyweight techniques, hard-core tutorials, invaluable reviews, listings and utilities as we do.



Every issue includes a valuable companion disk!

And only *The AmigaWorld Tech Journal* boasts of a technical advisory board comprised of industry peers. Indeed, our articles undergo a scrupulous editing and screening process. So you can rest assured our contents are not only accurate, but completely up-to-date as well.

Plus! Each issue comes with a valuable companion disk, including executable code, source code and the required libraries for all our program examples—plus the recommended PD utilities, demos of new commercial tools and other helpful surprises. These disks will save you the time, money and hassle of downloading PD utilities, typing in exhaustive listings, tracking down errors or making phone calls to on-line networks.

The AmigaWorld
TECH JOURNAL

In every issue of *The AmigaWorld Tech Journal,* you'll find . . .

- Practical hardware and software reviews, including detailed comparisons, benchmark results and specs
- Step-by-step, high-end tutorials on such topics as porting your work to 2.0, debugging, using SMPTE time code, etc.
- The latest in graphics programming, featuring algorithms and techniques for texture mapping, hidden-line removal and more
- TNT (tips, news and tools), a column covering commercial software, books and talk on the networks
- Programming utilities from PD disks, bulletin board systems and networks
- Wise buys in new products—from language system upgrades to accelerator boards to editing systems and more.

The fact is, there's no other publication like *The AmigaWorld Tech Journal* available. It's all the tips and techniques you need. All in one single source. So subscribe now and get the most out of your Amiga programming. Get six fact-filled issues. And six jam-packed disks. All at special Charter savings. Call 1-800-343-0728 or complete and return the savings form below—today!

To order, use this handy savings form.

Charter Savings Form

☑ *Yes!* Enter my one-year (6 issues, *plus* 6 invaluable disks) Charter Subscription to *The AmigaWorld Tech Journal* for just $59.95. That's a special savings of $29.75 off the single-copy price. If at any time I'm not satisfied with *The AmigaWorld Tech Journal,* I'm entitled to receive a full refund—no questions asked!

Name ______________________

Address ______________________

City ____________ State ________ Zip ________

☐ Check or money order enclosed. ☐ Charge my:

☐ MasterCard ☐ Visa ☐ Discover ☐ American Express

Account No. ______________ Exp. Date ________

Signature ______________________

Satisfaction Guaranteed!

Or your money back!

Canada and Mexico, $74.95. Foreign surface, $84.97. Foreign airmail, $99.95. Payment required in U.S. funds drawn on U.S. bank.

Complete and mail to:

The AmigaWorld Tech Journal

P.O. Box 802, 80 Elm Street
Peterborough, NH 03458

For faster service, call toll-free 1-800-343-0728.

TJ191

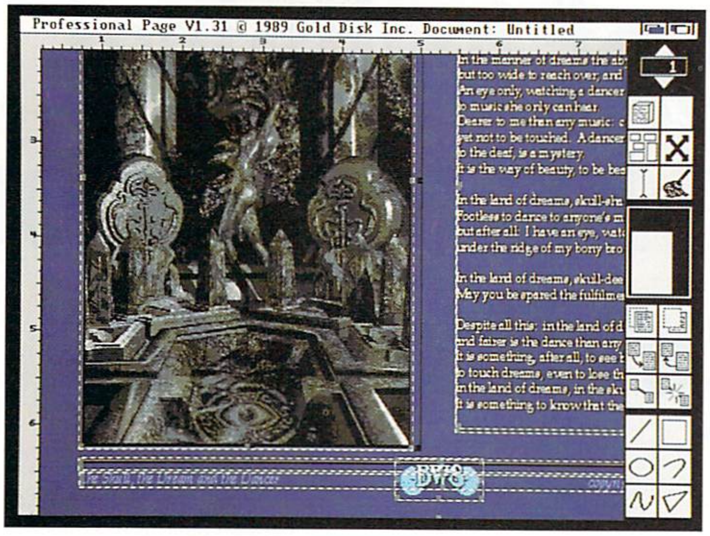


Figure 3. In the final stage before reproduction as a slide, the HAM picture is combined with structured text and graphics and placed against a solid color backdrop in Pro Page 1.3. The structured elements will render much more sharply than this screen shows.

that they are 1.16 times as tall as they are wide. In order to "unsquash" the picture, I needed to restore the 1:1.16 aspect ratio in my new image.

Because the image had been rotated, I had to rescale its width to 135 percent of its size (that's multiplying it by 1.16 twice; multiplying it by 1.16 just once would give it the aspect ratio of square pixels rather than our rectangular ones). TAD's scaling requester let me set the picture's width to the exact size I needed, and the result was a low-resolution screen 643 pixels wide and 768 pixels tall. I might have had TAD translate that to a lo-res HAM image, but I wasn't through yet.

Although TAD was dealing with the 24-bit data I had originally created, the display was in HAM, so some subtle shades in the image data did not show up on screen. Think of the image at this stage as a HAM picture, each pixel representing one pixel of a 24-bit image and using as close a match to the broader palette as HAM can provide.

I rescaled the image one more time, making it twice as tall as it had been, and requesting an interlaced HAM image instead of a low-resolution one. I also ►

Many Bits Make Better Pics

WHILE I WORKED on the experiments that led to this article, several important products were released or on the verge of release. Because they support the IFF 24-bit color format, you will be able to use them in combination with one another.

Advances in 3-D rendering software include Impulse's Imagine, Hash Enterprises' Animation:Journeyman, and NewTek's LightWave 3D.

Among new 24-bit and "near" 24-bit display hardware are Firecracker (Impulse), DCTV (Digital Creations), and the legendary Video Toaster (NewTek). Each of these display systems has different strengths and weaknesses.

Firecracker is a true 24-bit RGB display, with which you can bypass NTSC video altogether. Such an RGB display is the best option for taking 24-bit graphics to print, because it enables you to see the entire image without a conversion to video. The Firecracker itself is now shipping (its software supports 24-bit IFF), and Impulse promises a true 24-bit paint program (Light) to accompany Firecracker free of charge.

DCTV, an NTSC-only device, offers a very inexpensive display that *is* video. It cannot display your 24-bit graphics as accurately as the Firecracker, but its video images are very good. DCTV's display resolutions are similar to standard Amiga displays, but in about four million colors. Its real strength is that it can animate in real time at about the same speed as normal high-resolution, eight-color Amiga graphics. Digital Creations is also promising a paint program for DCTV, which will operate in NTSC but load and save IFF 24-bit files.

The Video Toaster, which is shipping in small quantities, also offers an NTSC display, and Toaster Paint, its accompanying paint program, supports the 24-bit IFF format. (For details, see "Amiga Video: Done to a 'T'," Oct. '90, p. 20.)

Each of these products is significant for the type of project this article addresses. As an example, Imagine allows you to render in any resolution you choose, so you can use it to create images that take full advantage of the film recorder's resolution.

Paint software supporting 24 bits lets you retouch these images without converting to HAM mode, while 24-bit or "near" 24-bit NTSC displays give you a good idea of what your image actually looks like. It is possible to manipulate a 24-bit image without such a display, but only by working blindly. The best alternative without such a display is to work in HAM up until the final rendering, but with this method you cannot retouch your work.

ASDG's The Art Department Professional, still in beta form at the time of writing, offers more image-processing alternatives, batch processing, and multiple save formats, and it promises direct access to the display systems mentioned above.

Finally, the just-released Professional Page 2.0 supports the 24-bit IFF picture format. This means that you can now use 24-bit files directly within Pro Page.

Put all that together, and it adds up to this: The process outlined in this article will soon—maybe even by the time you read this—be possible in every detail using 24 bits. Forget HAM's 4096 colors altogether. With these new products, you'll be able to render 24-bit graphics in any resolution, touch them up with 24-bit paint software, and then proceed to output them in their full 16.7 million colors. □ ***—BWS***

SuperGen™

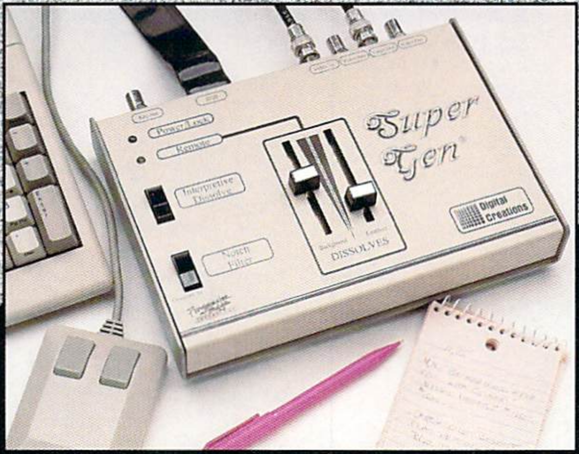
GENLOCK AND OVERLAY SYSTEM

▲ Broadcast quality RS-170A composite output
▲ Two independent dissolve controls
▲ Software controllable
▲ Compatible with all Amiga® models
▲ Dual video outputs
▲ Key output
▲ Selectable 3.58MHz Notch Filter

SUPERGEN IS THE PROVEN INDUSTRY STANDARD GENLOCK AND OVERLAY SYSTEM FOR THE AMIGA

$749.95





DIGITAL
C R E A T I O N S

2865 Sunrise Boulevard Suite 103 Rancho Cordova CA 95742
Telephone 916/344-4825 FAX 916/635-0475

INTRODUCING THE

SuperGen SC™

ALL THE QUALITY OF OUR ORIGINAL SUPERGEN™ NOW ON A CARD FOR THE AMIGA® 2000 SERIES

▲ Occupies the video slot
▲ 1 video in, 1 video out
▲ Broadcast quality RS-170A composite output
▲ Switch selectable overlay function
▲ Software controllable
▲ Optional remote dissolve console ($75)

$599.95

SuperGen 2000s™

THE FIRST TRUE Y/C GENLOCK & OVERLAY CARD FOR THE AMIGA® 2000 SERIES COMPUTERS

▲ S-VHS, ED-BETA, Hi8 compatible
▲ broadcast quality NTSC RS-170A output
▲ built in SC/H phase adjustability
▲ built in sync generator ▲ dissolves

$1995



DIGITAL
C R E A T I O N S

2865 Sunrise Boulevard Suite 103 Rancho Cordova CA 95742
Telephone 916/344-4825 FAX 916/635-0475

©1989 Digital Creations.
Amiga is a registered trademark of Comodore Business Machines.

Circle 29 on Reader Service card.

selected Floyd-Steinberg dithering from TAD's Dithering Modes panel. TAD provided me with a new HAM conversion of the 24-bit image, which now had pixels half the size of the original 24-bit pixels and simulated—through dithering—the subtleties of color not available in the first HAM image. The resulting 643 × 1536-pixel HAM screen was the best approximation of the 24-bit image I could get.

I performed some final retouching of the image in Deluxe PhotoLab (now bundled with DeluxeVideo III, $149.95, Electronic Arts), which allows you to work on very large bitmaps. (Other HAM paint programs do this also, but I prefer PhotoLab for detail work, as opposed to broader, more painterly effects.

Slip-Sliding Away

The Professional Page document that would become my slide had to conform to certain specifications in order for Hammond Photographic Services to handle it. It had to be sized at $10^1/_2$ × 7 inches; any structured text or graphic, in color, could be used just as in a printed document.

Using Pro Page 1.3 and Gold Disk's Compugraphic-fonts expansion disk, I imported my text from a word processor and formatted it in the Palacio font, which is equivalent to Postscript's Palatino. I duplicated the text box of the poem and changed its color to black. By dropping this cloned version of the text box behind the original, I created a drop shadow for the text.

The signature logo is a Professional Draw 2.0 ($295, Gold Disk) clip. I used a plain color backdrop and added the bitmapped HAM image and a double outline around it in color. Figure 3 shows a close-up of part of the document in Pro Page.

You might notice, in Figure 3, that the image looks a bit compressed horizontally. That's because Professional Page treats the screen as though the pixels were square, which is much easier for its calculations. As of version 1.3, however, Pro Page automatically scales bitmapped graphics correctly as they are brought in, so the squashing is an illusion.

After making some adjustments and printing some proofs in gray scale on my Hewlett-Packard Deskjet printer, I produced the final version of the slide and mailed it to Hammond Photographic Services to be output on the film recorder.

The Rest of the Story

When the mailman returns your finished slide from the service bureau, you may feel that you are at the end of the road. In fact, you are really only at the beginning. A 35mm slide or negative is a ticket to any form or size of reproduction for the image—be it an illustration, print, poster, T-shirt design, or what-have-you. Not only is the image now alive in the real world, but it is also sharper and better than the images you are used to seeing on your monitor. Moreover, it is an image that anyone, anywhere, can view.

We concentrate so much on the evolution of our imaging tools that it is easy to overlook the basic need of artists: to communicate. Not just with one another, or with people who have similar systems, but to the wide world beyond. The true usefulness of our tools can be measured not by how much we can do with them, but by the degree to which they make us better able to bring the works of our imagination out into that world. ■

Bradley Schenck is a freelance graphic artist who has won the Badge Killer Demo contest twice in a row. His 1989 winning entry, The Sentinel, was created in Turbo Silver. Write to Brad c/o AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458*

Manufacturers' Addresses

ASDG Inc.
925 Stewart St.
Madison, WI 53713
608/273-6585

Digital Creations
2865 Sunrise Blvd., Suite 103
Rancho Cordova, CA 95742
916/344-4825

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171
800/245-4525

Gold Disk
5155 Spectrum Way, Unit 5
Mississauga, Ont.
Canada L4W 5A1
416/602-4000

Hammond Photographic Services
11280 Washington Place
Culver City, CA 90230
213/390-3010

Hash Enterprises
2800 E. Evergreen
Vancouver, WA 98661
206/573-9427

Impulse Inc.
6870 Shingle Creek
Pkwy., #112
Minneapolis, MN 55430
612/566-0221

NewTek
215 S.E. 8th St.
Topeka, KS 66603
913/354-1146
800/843-8934



Comin' at You

Create 2-D artwork with a 3-D look without colored glasses or modeling programs.

By Brian Williams

WANT TO REPLACE your listless sketches with pictures that jump off the page at you? Lacking stereography's advantage of two discrete images, two-dimensional pictures, such as the engine below, must rely on subtle psychological tricks to fool the brain into perceiving depth. Don't reach for a copy of Freud or Jung; perspective, balance, shading, and color are the mind benders in art.

Before firing up DeluxePaint III ($149.95, Electronic Arts) or whatever your favorite paint program is, consider your subject carefully. I wanted my example image to project mass, dimension, and detail.



After entertaining several ideas, I settled on a railway train. A popular icon in American culture, the train is recognized for mass and volume. By incorporating it in the picture, I could draw on viewers' personal memories to reinforce the picture's message.

Next, I had to decide on the train's representation: Should it be rendered in an abstract, realistic, or stylized form? How should I depict it? Should it be a close-up detail or a wide view? Ultimately, I chose the front of an old steam engine ripping through a flat picture plane. The angle was dramatic, and the classic engine full of colorful detail.

Figure 1 shows the initial sketch. I used DPaint's line tool to determine each element's size. There are three areas of interest: the engine, the background pattern, and the text box in the lower-right corner to balance the large engine, which is oriented vertically to the left side of the screen. Notice that the latter does not intersect any of the picture's edges. Doing so would enhance the flatness of the image and undermine the three-dimensional effect. I also reserved enough room under the track so that no shadows would hit a screen edge.

Because I was designing the picture for the printed page, I chose absolute white (the lightest shade in the palette) for the background. If you are under no constraints, you can use other depth-enhancement techniques. A black background, for instance, would allow the train to project better than the light background. If the border of the picture were not fixed, you could run the track off the image a little way onto the printed page. ►

A background pattern provides tactile visual detail that, because the pattern is clearly oriented in a plane, defines the background as two-dimensional. A completely blank background does not. Be careful in your choice: Do not make the pattern so prominent that it inhibits the relief of the main image. I decided to repeat an elevation of the engine in a gray that's dark enough to be seen but light enough not to be distracting. Such a shade leaves no question in the viewer's mind as to the main focus of the piece. If you use a more complex background, try blurring it to subdue its impact.

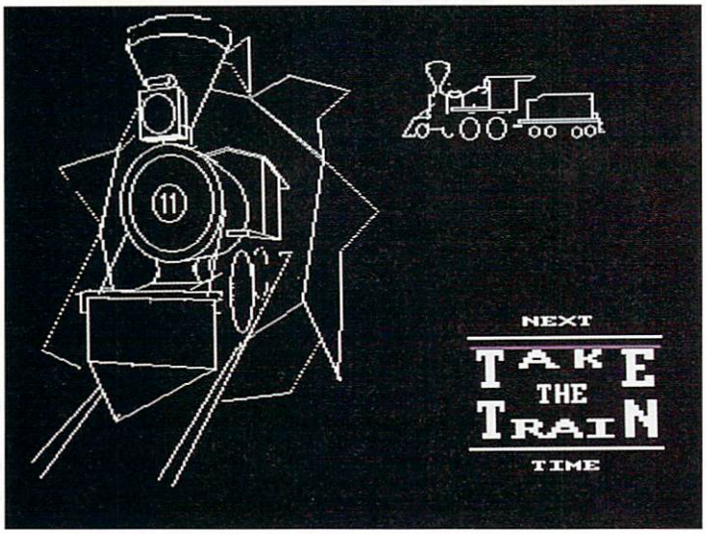


Figure 1. Before starting in earnest, sketch your picture's main elements to determine their relative sizes.

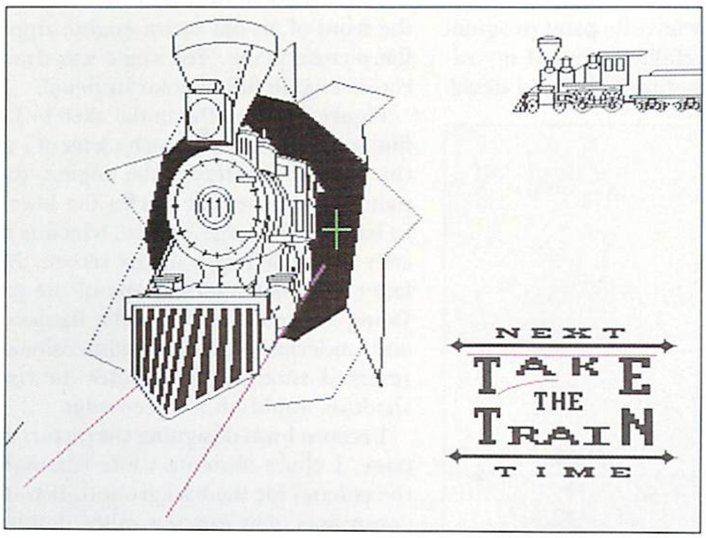


Figure 2. In the perspective layout, all receding parallel lines converge to the vanishing point (the green cross).

PERSPECTIVE: VANISHING VISIONS

In addition to helpful guidelines, perspective possesses exact rules, unlike most disciplines in art. The most important is that the farther away you wish objects to appear, the smaller they must be. This principle has several offshoots. Regularly spaced objects (such as telephone poles) must be drawn closer together—as well as smaller—as they recede into the distance; and sets of lines that are in reality parallel (yet not in the plane of the drawing) converge to points on a horizontal line in the distance. This line is called the horizon line and represents the physical horizon in the real world. I drew the engine using a subset of standard two-point perspective called one-point perspective. Under this rule, all receding parallel lines converge to a single point, known as the vanishing point, on the horizon, and vertical and horizontal lines are drawn actually parallel (the vanishing points in such cases being "at infinity").

If you need help, DeluxePaint III has a useful perspective tool for plotting brushes in three dimensions. To re-create the track, for example, draw an overhead view of a section of track in full detail, including the spikes and wood grain of the ties. Grab the image as a brush, and rotate it into position along the x and y axes using the perspective keypad controls. Enter activates perspective mode; 1, 2, and 3 control movement on the z axis, 4, 5, and 6 on the y axis, and 7, 8, and 9 on the x axis. The decimal resets the center, and the minus gives you a perspective fill. 0 resets all the axes.

The drawback is that after the computer plots the rotated view, you must add the rail and tie thicknesses manually. Because of these time-consuming touch-ups, I opted instead to draw the track for the example by hand. As I can draw fairly quickly, the perspective plot would not save much time.

Figure 2 shows the perspective layout for the train. Note the green cross that marks the vanishing point. Here, all receding lines converge: rails, tie ends, and running boards on the engine. The strictly two-dimensional background contrasts with the perspective train. The flat, gray engine in the upper-right corner of the screen has enough detail to serve its purpose. Later, when final layout is ready, I will repeat this image across the screen.

BALANCE: LEVELING THE SEE-SAW

Figure 3 shows the outline drawing filled with colors. At this stage, you should move the basic shapes and adjust the colors to create a visually balanced image for the final layout. While detail may not be present at this point, the visual weights of the colored areas will not change significantly, so you can position the various elements to avoid the characteristic lopsided feel of improperly balanced images. Here, the text in the lower-right corner helps to balance the engine, both horizontally and vertically. I find layout is a pleasure on the computer because I can reposition elements on screen with great ease and accuracy.

Because your main elements (in my case the engine,

and text) will balance differently on a blank background than on a pattern, you must repeat the background pattern before repositioning the main objects. DPaint's pattern-fill feature makes this easy. For example, grab the small gray engine as a brush and fill it into the blank area. You will have to experiment a bit to make the rows overlap vertically. It's even more difficult to ensure that each screen edge cuts through a row or column. Keep trying! Unlike the "three dimensional" engine that must not hit an edge, the "two-dimensional" background needs to touch the edges to appear flat.

Shading: A Matter of Degrees

An artist's best tool for achieving depth is good shading. Emulating the excesses and nuances of natural lighting in an image provides the brain with the most important visual-depth clues. Some people do not posses binocular vision; while their brains receive signals from two eyes, they do not process images as being three-dimensional. Such people can still live perfectly normal lives (minus the thrill of an occasional ViewMaster reel) because light and shadow, combined with relative size and parallax, provide depth to two-dimensional images.

In addition, most of that light and shadow is only gray-scale. Much of the world around us is made of mostly gray tones. Beiges, steel blues, and pale greens are not as saturated as film processors would lead you to believe. Human vision reflects this in the eye's retina. Rods, the cells that see only grays, outnumber cones, which see color. If anything in a picture has to be right, it is the shading.

Figure 4 shows the fully shaded image, minus the rips in the paper. The lighting is a fairly standard three-point scheme, simulating three lights: direct illumination from overhead left, ambient light on the right shadow side, and a backlight directly above the engine. The old adage "shoot with the light behind you," conceived to prevent amateur color photographers from becoming discouraged, does not produce the most flattering results.

The picture is a dark area; the train, on a light background, is basically black on white. Of the two extreme contrast possibilities, black on white and vice-versa, most people perceive white projecting forward on black more strongly than black on white. If a white background is a design constraint, as it is here, you can work around it. Depth cues from lighting in this image come from the careful use of shadows in and around the engine and ripped pieces of paper. On the computer, you can add with great precision subtle highlights and shadows that would take a photographer hours to achieve. (See "Illusions of Depth," p. 50, Jul. '90 for further advice.)

In general, the train gets darker as it recedes into the distance, eventually disappearing into the darkness. Note, however, the sudden drop off on the cab and on the ties below it. This represents more or less direct light "coming though" the ripped hole. The material each section represents also determines how you handle light and shadow. The boiler and stack are black, but I rendered them in grays to show highlights of detail. The cast-iron boiler has a rough surface, which I handled differently from the polished metal stack. The brass details and the glass in the headlamp and cab window are all reflective surfaces.

While the example picture does not have too many

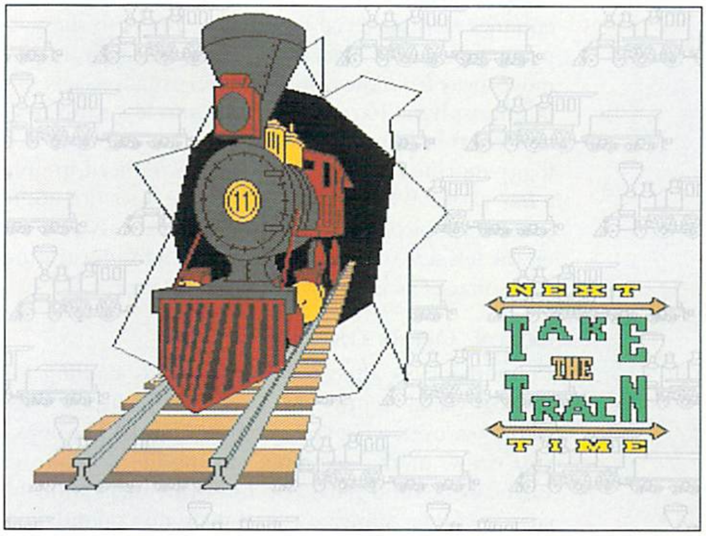


Figure 3. With the visual weights of the elements set, balance them on your background pattern.

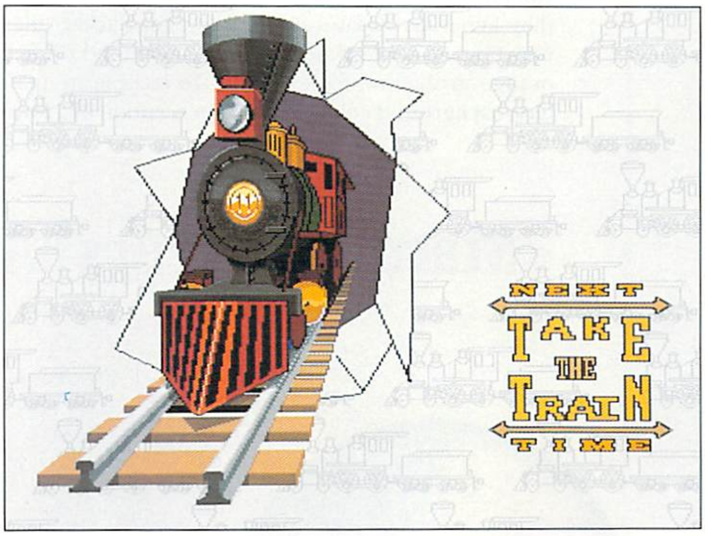


Figure 4. Add the highlights and shadows to provide the final touches.

harsh shadows, you should consider your shadows carefully. Heavy, long shadows on any background can form a visual element that affects the balance of the image. Plan for shadows from the outset and use DPaint's shaded-drawing mode for the best effect.

First, draw the background in a set of sequential registers, such as a gray scale. Then grab the area ►

you want your shadow to occupy as a brush, select the shade option, and stamp the shadow down with the left mouse button to darken the area. This will, of course, produce a perfectly uniform shadow with hard edges. Creating diffuse edges and natural light-falloff requires old-fashioned hard work. Full-spectrum programs, such as Photon Paint 2.0 (Micro-Illusions, $149), have special tools to create feathered shadows.

For a variation, you could use aerial perspective to enhance depth. Aerial perspective refers to the natural tendency for objects to fade increasingly as they move away from the camera plane, usually as a result of atmospheric haze. Colors become less saturated, and contrast diminishes. An extreme example is a foggy morning on which visibility is reduced to only a few yards. While aerial perspective does not apply to the train picture because of the precarious contrast on the left side of the boiler, it is useful for illustrating such images as mountains in the distance.

COLOR: OFF IS ON

Color theory is almost as important as shading for adding visual depth and weight to pictures. With color, however, what you do *not* do counts. The object you draw, in this example an engine, is made of variously colored parts. Do not draw them with the correct colors. A mirror is not silver, nor a pond dark brown, nor a tire black. All objects, no matter what their colors, reflect the environment around them.

When placed in light and shadow, a given color will take on a range of values. As colors get brighter, they generally desaturate. As they get darker, they may take on a whole new color. Yellows tend toward orange in shadow, for example. To complicate matters, background colors shift the perception of a foreground color. Red on blue feels a lot more "red" than red on orange. The same holds true for background intensity. A red that appears bright on a black background looks very dark on white.

You can correct for this phenomenon and use color to enhance depth. The most common way is to contrast an easy-to-see color on a background color that is opposite it on the color wheel. (See "Color Roulette," p. 38, Sep. '90, for a handy way to test combinations.) Yellow is a good example, because its spectral wavelength is in the range most people find easiest to see. Opposite it on the color wheel is violet. (Now you know why so many jewelers display yellow gold on dark blue velvet.) The white paper background for the engine does not permit this sort of color contrast, so I use another trick: Essentially all the detail and colors are located on the engine, not in the background. They get brighter the further out they come.

The engine is a very "clean" drawing. The important details are all present, in the right places and properly colored and shaded. No unnecessary details confuse the viewer. There are a lot of details, however, that the viewer does not see but would miss if they were absent—subtle shadows and relections, forced contrasts surrounding text to make it more visible, concentrated colors, and plenty of anti-aliased lines (to remove the "jaggies" on highly contrasting diagonals). Details like these let the image project forward. They give it depth and mass and make it jump out from the two-dimensional page. ■

Brian Williams is a computer illustrator for multimedia productions, educational projects, and games. He also lectures frequently on art and animation techniques. Write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Manufacturers' Addresses

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
818/785-7345



Circle 83 on Reader Service card.

LATEST EUROPEAN RELEASES

Coast to Coast Technologies brings the latest UK and European titles direct from their European distribution facility.



We can deliver brand new titles within days of thier European release . . . if it's available in Europe, we have it!

MAJOR NEW RELEASES

Robocop 2
Ocean
$39.99



Billy the Kid	Ocean	$39.99
Battle Command	Ocean	$39.99
Pang	Ocean	$39.99
Midnight Resistance	Ocean	$39.99
Puzznic	Ocean	$39.99
Night Breed	Ocean	$39.99
Epic	Ocean	$39.99
F29 Retaliator	Ocean	$39.99
N.A.R.C.	Ocean	$39.99



Total Recall
Ocean
$39.99

Speedball 2	Imageworks	$39.99
Cadaver	Imageworks	$39.99
Back to the Future 2	Imageworks	$39.99

UMS 2	Rainbird	$44.99
Rick Dangerous 2	Rainbird	$39.99
E Swat	US Gold	$39.99
Line of Fire	US Gold	$39.99
Operation Harrier	US Gold	$39.99
U.N. Squadron	US Gold	$39.99
Atomic Robokid	Activision	$39.99
Dragon Breed	Activision	$39.99
Spindizzy 2	Activision	$39.99
Z Out	Rainbow Arts	$34.99
Turrican	Rainbow Arts	$39.99
Tournament Golf	Elite	$39.99

Strider 2
US Gold
$39.99



Gremlins 2	Elite	$39.99
Wonderland	Virgin	$44.99
Golden Axe	Virgin	$39.99
Judge Dredd	Virgin	$34.99
The Spy Who Loved Me	Domark	$39.99
Badlands	Domark	$34.99
Saint Dragon	Storm	$39.99
James Pond	Millenium	$39.99
Betrayal	Rainbird	$44.99

The Hunt for Red October
Grandslam
$39.99



Paradroid 90	Hewson	$39.99
Amazing Spiderman	Empire	$39.99
Simulcra	Firebird	$39.99
Monty Python	Virgin	$39.99
Operation Stealth	US Gold	$39.99
Mean Streets	US Gold	$44.99
Time Machine	Vivid Image	$39.99
Team Yankee	Empire	$44.99
Gold of the Aztecs	US Gold	$39.99
Power Monger	E.A.	$39.99
Voodoo Nightmare	Palace	$39.99
Torvak the Warrior	Core	$39.99
Deathtrap	Anco	$39.99



Chase HQ 2
Ocean
$39.99

AMAZING BUDGET TITLES TOO! FROM ONLY $9.99

THE ABOVE TITLES ARE ONLY REPRESENTATIVE OF THE MANY U.K./EUROPEAN SOFTWARE RELEASES.
NEW TITLES ARE RELEASED DAILY - CALL 407 - 767 - 0779 FOR LATEST RELEASE LIST

U.K. MAGAZINES

Subscribe and save
Call 407-767-0779



Ace	$5
Amiga Action	$5
Amiga Computing	$8
Amiga Format (with disk)	$8
Amiga User International	$8
Raze	$5
The One	$5

HOW TO GET YOUR ORDER *FAST*...

CALL TOLL FREE - 1 - 800 - 962 - 0494 - ORDERS ONLY

WE WILL PROCESS YOUR ORDER QUICKLY & EFFICIENTLY TO ENABLE YOU TO START RECEIVING THE BENEFITS OF YOUR PURCHASE WITHIN DAYS, NOT WEEKS.
OUR MULTI-USER XENIX BASED ORDER PROCESSING SYSTEM CONTROLS YOUR ORDER FROM THE MOMENT YOU PLACE IT RIGHT THROUGH TO DESPATCH. ORDERS NORMALLY DESPATCHED WITHIN 48Hrs.

COAST TO COAST TECHNOLOGIES INC.,

1855 S. R.434, SUITE #208, LONGWOOD, FLORIDA 32750. TECHNICAL/CUSTOMER SERVICE (407) 767 - 0938

WE ACCEPT MASTERCARD
VISA/CHECKS/MONEY ORDERS
or COD's (ADD $2)

***ADD $4 SHIPPING AND HANDLING TO YOUR TOTAL ORDER ($10.00 CANADA/MEXICO)**
WE SHIP ALL GOODS 2nd DAY AIR UPS

CCT 3

Circle 7 on Reader Service card.

THE NEW MK II VERSION IS HERE!!



AMIGA ACTION REPLAY II

ONLY

$99.99

AMIGA 2000 VERSION

$119.99

SHIPPING & HANDLING $4.00

NOW YOU CAN FREEZE MOST ANY PROGRAM AND MAKE A BACKUP AT THE PRESS OF A BUTTON!

YES, AMIGA ACTION REPLAY PLUGS INTO THE EXPANSION PORT OF YOUR AMIGA AND WORKS BY TAKING A SNAPSHOT OF THE WHOLE PROGRAM IN MEMORY AND SAVING IT TO DISK. THE BACKUPS WILL RELOAD COMPLETELY INDEPENDENTLY OF THE CARTRIDGE

BUT THAT'S NOT ALL... AMIGA ACTION REPLAY GOES EVEN FURTHER BY PROVIDING AN UNBELIEVABLE RANGE OF TOOLS FOR BOTH THE HACKER AND PROGRAMMER ALIKE

- **SAVE THE ENTIRE PROGRAM IN MEMORY TO DISK**
  Special compacting techniques enable up to 3 programs to fit on one disk. Now saves directly to disk as Amiga Dos - reloads independently of the cartridge - even transfer to hard drive! Works with up to 2 Megs of Ram - even 1 Meg Chip Mem (Fatter Agnus).
- **UNIQUE INFINITE LIFE/TRAINER MODE - NOW MORE POWERFUL**
  Allows you to generate more and even infinite lives, fuel, ammo, etc. Perfect as a trainer mode to get you past that "impossible" level. Very easy to use.
- **IMPROVED SPRITE EDITOR**
  The full Sprite Editor allows you to view/modify the whole sprite set including any "attached" sprites. RANGE OF IMPROVED FEATURES.
- **VIRUS DETECTION**
  Comprehensive virus detection and removal features to protect your software investment. Works with all presently known viruses.
- **SAVE PICTURES AND MUSIC TO DISK**
  Pictures and sound samples can be saved to disk. Files are saved directly IFF format suitable for use with all the major graphic and music packages. Samples are displayed as screen waveform.
- **SLOW MOTION MODE**
  Now you can slow down the action to your own pace. Easily adjustable from full speed to 20% speed. Ideal to help you through the tricky parts!
- **RESTART THE PROGRAM**
  Simply press a key and the program will continue where you left off.
- **FULL STATUS REPORTING**
  At the press of a key now you can view the Machine Status, including Fast Ram, Chip Ram, RamDisk, Drive Status, etc.
- **POWERFUL PICTURE EDITOR**
  Now you can manipulate and search for screens throughout memory. Over 50 commands to edit the picture plus unique on screen status "overlay" shows all the information you could ever need to work on screens. No other product comes close to offering such dynamic screen handling of frozen programs!!
- **MUSIC SOUND TRACKER**
  With Sound Tracker you can extract the complete music in programs, demos, etc. and save them to disk. Saves in format suitable for most track player programs. Works with loads of programs!!
- **AUTOFIRE MANAGER**
  From the Action Replay II preference screen you can now set up autofire from 0 to 100%. Just imagine continuous fire power? Joystick 1 and 2 are set separately for that extra advantage!
- **DISKCODER**
  With the new "Diskcoder" option you can now 'tag' your disks with a unique code that will prevent the disk from being loaded by anyone else. "Tagged" disks will only reload when you enter the code. Very useful for security.
- **PREFERENCES**
  Action Replay II now has screen colour preferences with menu setup. Customise your screens to suit your taste. Very simple to use.
- **DISK MONITOR**
  Invaluable disk monitor - displays disk information in easy to understand format. Full modify/save options.
- **DOS COMMANDS**
  Now you have a selection of DOS commands available at all times - DIR, FORMAT, COPY, DEVICE, etc.
- **DISK COPY**
  Disk Copy at the press of a button - faster than Dos Copy. No need to load Workbench - available at all times.
- **BOOT SELECTOR**
  Either DF0 or DF1 can be selected as the boot drive when working with Amiga Dos disks. Very useful to be able to boot from your external drive.

PLUS AN EVEN MORE POWERFUL MACHINE CODE FREEZER/MONITOR

EVEN MORE FEATURES INCLUDING 80 COLUMN DISPLAY AND 2 WAY SCROLLING:-

- Full M68000 Assembler/Disassembler
- Full Screen Editor
- Load/Save block
- Write string to memory
- Jump to specific address
- Show RAM as text
- Show frozen picture
- Play resident sample
- Show and edit all CPU registers and flags
- Calculator
- Help Command
- Full search feature
- Unique Custom Chip Editor allows you to see and modify all chip registers - even Write Only registers
- Notepad
- Disk handling - show actual track, Disk Sync pattern, etc.
- Dynamic breakpoint handling
- Show memory as HEX, ASCII, Assembler, Decimal
- Copper assemble/disassemble

REMEMBER AT ALL TIMES YOU ARE INTEROGATING THE PROGRAM IN IT'S FROZEN STATE WITH ALL MEMORY AND REGISTERS INTACT - INVALUABLE FOR THE DE-BUGGER OR JUST THE INQUISITIVE!

HOW TO GET YOUR AMIGA ACTION REPLAY...

CALL TOLL FREE - 1 - 800 - 962 - 0494 - ORDERS ONLY

WE WILL PROCESS YOUR ORDER QUICKLY & EFFICIENTLY TO ENABLE YOU TO START RECEIVING THE BENEFITS OF YOUR AMIGA ACTION REPLAY WITHIN DAYS, NOT WEEKS.
OUR MULTI-USER XENIX BASED ORDER PROCESSING SYSTEM CONTROLS YOUR ORDER FROM THE MOMENT YOU PLACE IT RIGHT THROUGH TO DESPATCH. ORDERS NORMALLY DESPATCHED WITHIN 48Hrs.

COAST TO COAST TECHNOLOGIES INC.,

1855 W S.R.434, SUITE #208, LONGWOOD, FLORIDA 32750. TECHNICAL/CUSTOMER SERVICE (407) 767 - 0938

WE ACCEPT MASTERCARD VISA/CHECKS/MONEY ORDERS or COD's (ADD $2)

*ADD $4.00 SHIPPING AND HANDLING ($10.00 CANADA/MEXICO) WE SHIP ALL GOODS 2nd DAY AIR UPS

ACCENT ON GRAPHICS

#23

A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

Variation, Not Duplication: The Repeat Key

A "REPEAT-KEY" function can be a very useful feature in a paint package, especially as so many paint-program operations are becoming increasingly adjustable. The concept is simple (a repeat key merely repeats your last operation to the screen), yet not every program includes this feature in its repertoire. One program, Digi-Paint 3 ($99.95, NewTek), however, does make excellent use of the repeat key, and this month we'll explore the use of this powerful feature in the course of creating an abstract painting.

Controlled Transparency Is The Key

Specifically, Digi-Paint 3 effectively incorporates the repeat-key concept into the philosophy of HAM painting. To me, the key element in HAM painting is not that you have 4096 colors with which to paint; rather, it is that you can make use of controlled transparency. This is possible because the full range of colors is accessible. Utilizing controllable transparency, the computer artist can achieve effects analogous to watercolor washes, drybrush, and oil glazes. By combining "undo" and "repeat," you have the power to experiment endlessly with drastic or subtle adjustments to those (and other) effects.

In this respect, the computer artist has the advantage over an artist using "traditional" media—where an experiment is a real commitment. Here experiments can be undone. A repeat key essentially allows the artist to change history—to set up a new effect and have it otherwise occur in precisely the manner as the previous action. It offers a solution to that problem artists so frequently encounter in the middle of a work: "If only I could have another chance. If only I could go back and do it again, knowing what I know now."

Digi-Paint's interface contains both an Undo button and a Repeat button. The keyboard shortcut for Undo is u, while for Repeat it is F5. The Escape key toggles the interface area on and off. If you learn no other keystroke shortcuts in Digi-Paint, learn these.

To begin, remain in the normal mode with a black background for painting, and make some basic adjustments to Tools and Controls. In Tools, set Dither to either random or ordered. I usually use random, but ordered can give a texture effect similar to canvas or charcoal paper. Turn Fill on and select rectangles for the first stages. Choose the single-pixel brush. In Controls, select Point Hotspot above the red ball. Set the left transparency slider three-quarters of the way up so the hotspot area of a shape is nearly, but not completely, opaque. Set the right slider all the way down to zero for totally transparent edges.

Moving the hotspot in the ball box now determines which part of a shape will have the most saturated color. Begin with the hotspot all the way in the upper-left corner. Select yellow from the palette and press ESC. Drag a rectangle across the full screen. As it fills, you see that there is intense yellow at the upper left and nearly pure black remaining at the lower right. Press ESC to toggle the menu on (or click the right mouse button to accomplish the same thing).

Select red from the palette, pull the hotspot to the upper-right corner of the box, toggle the interface off with ESC and press F5. This repeats your last operation of a full-screen filled rectangle, but with a new color and a new hotspot. Intense red at the upper right feathers into the yellows. Try blue with a lower-right hotspot and green with a lower-left

Making use of the repeat key in programs such as Digi-Paint 3 can add interesting effects to your HAM painting experiments.

one. The screen becomes a subtly shaded spectrum.

Experiment with other colors and hotspot settings, drawing smaller rectangles here and there. When a shape works, keep it and draw another. If it is unappealing, undo it, set a new hotspot, try a new color, and press F5 to see the new version in the same location. Keeping the hotspot near the center will produce soft-edged shapes. The accompanying illustration began in this manner with corner colors of reds, browns, and yellows.

ABSTRACT EXPERIMENTS

Now that you have the hang of using the keyboard with one hand while you use the mouse to paint, select Filled Freehand from the Tools interface. Again set the hotspot at the extreme upper left. Choose a bright color and draw a quick stroke on the screen. The starting and terminating points of the stroke will be automatically connected to form a shape. Now experiment with Undo to toggle the new shape on and off. Reset the hotspot or go into the full palette for a new color, and then hit F5.

With complex freehand shapes, the value of a repeat key becomes apparent. The shape you have drawn may be perfect, but the edge might be too hard. Undo it, adjust controls and color, and then repeat. To increase the effect of an operation, repeat it with no changes. One reason I seldom use full opacity in my controls is that I prefer to gradually "glaze" an area up. You can repeat an operation over the same shape as many times as you wish for cumulative effect.

In addition, you can combine multiple effects in exactly the same shape or area. To try this, set the hotspot at the upper left, select yellow and draw a complex,



Effective use of Digi-Paint's repeat key allows you to experiment with shapes and colors in any number of interesting ways, such as the subtly shaded spectrum of colors produced in the illustration "Fabric" (above).

rounded shape. Now select blue, set the hotspot to lower right and press F5. The shape becomes nicely modeled with an even blend of color. Warm color delineates the top edge and cool color the bottom edge, with a suggestion of light direction from the upper left. This is a very powerful feature that incorporates the accuracy of the computer with the kind of serendipity one comes to expect from traditional media. The repeat key allows you to experiment with controlled accidents.

I finished my simple abstract by selecting the Darken mode from the menu and "carving" a few deep shadows into the piece. I set up crisp edges in the Darken mode with the hotspot control and used these edges to define a few of the brightly colored shapes in the image. All the modes and tools respond to the transparency controls, providing endless combinations and effects. If you are new to HAM painting, you can get off to a fast start with this simple technique that employs only a few effective tools and tricks. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.

Adding Gadgets in C

By David T. McClellan

INTUITION PROVIDES STANDARD gadgets, such as the close, front-to-back, and resizing gadgets at the corners of a program's window, but you can easily add your own gadgets inside a window or to its border. With simple C data structures and a few calls, your program can tell Intuition what your gadget looks like, where it's placed in relation to the window borders, and what its gadget ID is. Then, when the user of your program clicks the mouse on that gadget, Intuition sends your program GADGETDOWN or GADGETUP events, including the ID of the clicked gadget.

To demonstrate this, I'll walk you through the code behind a Quick-Zoom gadget, similar to one in the Macintosh and Amiga OS 2.0. It sits in the window's top-border drag bar and looks like a square button with a smaller square inset in its top left corner. When clicked, it zooms the window out to its maximum size or back to its previous smaller size and position. The gadget works faster than seizing and dragging the standard sizing gadget, and its underlying routines illustrate how to put a gadget in the top border (drag bar) of a window.

First, you must define your gadget's image and structural information. The following routines do so for our Quick-Zoom gadget.

```
#define HEIGHT 100 /* Initial, min, max height and width */
#define WIDTH 300
#define MINWIDTH100
#define MINHEIGHT 50
#define MAXWIDTH640
#define MAXHEIGHT 150
  /* Gadget id, image info */
#define GID_ZOOM1
#define GAD_HEIGHT 12
#define GAD_WIDTH 16
USHORT chip Zoom_Pict[GAD_HEIGHT] =
{ 0x0000, 0X3FFC, 0x318C, 0x318C, 0x318C, 0x3F8C,
  0x300C, 0x300C, 0x300C, 0x300C, 0x3FFC, 0x0000};
struct Image Zoom_Image={
  0,0, GAD_WIDTH, GAD_HEIGHT, 1, Zoom_Pict,
      0x1,0x0,NULL};
struct Gadget Zoom_Gadget={ /* Gadget for Zoom */
  NULL,    /* Next */
  -80,0, GAD_WIDTH,GAD_HEIGHT,  /* Left, Top,
      Width, Height */
  GADGHCOMP | GRELRIGHT | GADGIMAGE,  /* Flags */
  TOPBORDER | RELVERIFY, /* Activation */
  BOOLGADGET,   /* GadgetType */
  (APTR) &Zoom_Image,  /* GadgetRender */
  NULL,NULL,0L,(APTR) NULL,  /* Various don't cares */
  GID_ZOOM,   /* GadgetID */
  NULL   /* UserData */
};
```

Note the keyword chip in Zoom_Pict. This is a Lattice C addition, which puts the image in chip RAM, necessary for rendering. If you are using Aztec C, you will need to copy the imagery manually into an allocated chunk of chip memory.

To hold the previous window position/size, we define struct WinSizeStorage, of which we'll attach an instance to our opened window's UserData pointer:

```
struct WinSizeStorage {
  SHORT left, top;   /* Old left, top */
  SHORT width, height;   /* Old width, height */
};
```

Now, to install the gadget up in the drag bar, we use the ROM Kernel call AddGadget( ) *after* we open the window. The reason for this order is that system gadgets end up first on the system list at OpenWindow( ) time, with user gadgets attached after them. If we did not specify AddGadget( ) first, a click on the Quick-Zoom gadget would be interpreted as a click on the dragbar.

By using AddGadget( ) on an already open window, we can put Quick-Zoom first on the list, ahead of the dragbar, so that clicking it will result in the GADGETUP message we need. Because Quick-Zoom does not cover the entire drag bar, the remainder can still be used to move the window. Now let's look at the relevant initialization code:

```
struct NewWindow newwin;
struct Window *win;
```

```
struct WinSizeStorage *wss;
  /* Insert program-specific initialization code here */
  newwin.IDCMPFlags = CLOSEWINDOW|
       NEWSIZE|GADGETUP;
  newwin.FirstGadget = NULL;
  win = (struct Window *) OpenWindow(&newwin);
  wss = (struct WinSizeStorage *) AllocMem(
    sizeof(struct WinSizeStorage), 0);
  win->UserData = (BYTE *) wss;
  /* Add to front */
  AddGadget (win, &Zoom_Gadget, 0);
    /* & draw */
    RefreshGadgets(&Zoom_Gadget, win, NULL);
```

The above tells Intuition we want Gadget messages on release of the mouse button (GADGETUP), gives us a previous-size storage area attached to the window, and adds the gadget in front of the system gadgets. Now for the actual resizing code:

```
/* Messages from Intuition */
switch (message->Class) {
case GADGETUP:
  msggad = (struct Gadget *) (message->IAddress);
  switch (msggad->GadgetID) {
    case GID_ZOOM:
      wss = (struct WinSizeStorage *)
        win->UserData;
    if ((win->Width != MAXWIDTH) ||
    (win->Height != MAXHEIGHT))
      { /* Not at max size. Save old size,pos */
    /* Move left/up, then grow */
    wss->left = win->LeftEdge;
      wss->top = win->TopEdge;
      wss->width = win->Width;
      wss->height = win->Height;
    MoveWindow (win,
      -(win->LeftEdge),
      -(win->TopEdge));
    SizeWindow (win,
      MAXWIDTH - win->Width,
      MAXHEIGHT - win->Height);
      }
      else
      { /* Shrinking - resize first */
    SizeWindow (win,
      wss->width - win->Width,
      wss->height - win->Height);
    MoveWindow (win,
      wss->left - win->LeftEdge,
      wss->top - win->TopEdge);
      }
    /* Now repaint the window if necessary */
    ...
    break;
  }
  break;
}
```

This section of code is inside a standard message loop. To enter it, the program checks the Intuition message to determine if it is GADGETUP. Upon confirmation, the first thing the program does is retrieve a pointer to the size storage area, and then look at the current size of the window. If it is not at its maximum size, the program resizes it up to the maximum after storing its current size and position. If the window *is* at its maximum, however, the program sizes it down to the previous smaller dimensions. Finally, the program does any necessary repainting, and it's done. ■

David T. McClellan is a contributing editor to AmigaWorld. *Write to him at 104 Chevron Circle, Cary, NC 27511.*

Creative™
COMPUTERS

U.S. ORDERS ONLY:
800-872-8882
Canada: 1-800-548-2512

CUSTOMER SERVICE OR ORDER STATUS
213-214-0000

NEW XMAS HOURS

4453 Redondo Beach Blvd., Lawndale, CA 90260 - Mon-Fri 7AM-7PM Sat 8-6 PST - FAX: 213-214-0932

UPGRADE BEYOND A3000 PERFORMANCE!
with GVPs A3001 Accelerators

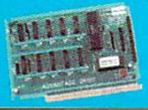


28 Mhz $1449
33 Mhz $1649
50 Mhz $2489

All the above boards are in 68030/68882/4Mb configuration.
For a 40Mb Quantum HD add $389 - for an 80Mb Quantum add $699

THE ICD ADVANTAGE

A new lightning fast SCSI host adapter for the Amiga 2000/2500 computers.



only $139

NEW FROM ICD

"FLICKER FREE VIDEO" HARDWARE FLICKER ELIMINATOR FOR ALL AMIGAS $359

BASE Board

4 Megabyte Memory Board for the Amiga 500 by Expansion Systems

- Battery-backed clock
- Easy plug-in installation
- XRam 6mb Upgrade now available - $129.00 w/512K

BaseBoard 0K ..$111.00
512K $149.00
4mb $364.00

CA-880



$99

- Most reliable drive for the Amiga
- Slimline, attractive design
- Drive Pass-thru
- Low power consumption

GVP SERIES II A500



CALL FOR OTHER SIZES

40MB $599

HARDWARE

NEW HARDWARE

AE RAMWORKS 2000 2/8 .... 238.00
MAXI-SKETCH TABLET .... CALL
NEXUS HC0 0/4MB 259.00
PRORES 339.00

ACCELERATORS

MEGA MIDGET RACER 699.00
MEGA MIDGET RAM 0/8MB 319.00

AUDIO HARDWARE

A10 STEREO SPEAKERS 33.95
AMAS MIDI SAMP./A1000 .... 124.00
AMAS MIDI SAMPLER 124.00
AMPLIFIED SPEAKERS 84.95
CMI MIDI 1 (EXT) 56.95
ECE MIDI 1000 .... 49.95
ECE MIDI PLUS 49.95
MIDI GOLD 500 .... 64.95
MIDI GOLD INSIDER 64.95
PERFECT SOUND 500/200 .... 70.95
POWER COMPUTING MIDI 38.95
SOUNDSCAPE MIDI PACK 279.95
SPIRIT MIDI-STAR 139.00

FLOPPY DRIVES

AE 880K DISK DRIVE 109.00
AE HIGH DENSITY DRIVE 199.00
CA-880 FLOPPY DRIVE 105.00
CUTTING EDGE MAC DRIV 194.00
GVP FD 2010 IMPACT 95.00
UNIDRIVE 109.00
UNIDRIVE ENHANCED 149.00

HARD DRIVES AND CONTROLLERS

ADVANTAGE 2000 SCSI 139.00
CSI 6100 AUTOBOOT CRD 79.95
GVP SERIES II HC0 40Q 495.00
GVP SERIES II HC0 80Q 779.00
GVP SERIES II HC0 170 .... 1099.00
GVP SII A500 HD8 40MB 599.00
GVP WT-150 TAPE DRIVE 639.00
GVP XC CASE W/SYQUEST 1149.00
GVP XC CASE W/WT-150 .... 989.00
GVP XC CASE/NO DRIVE 179.00
HARD DRIVE CASE 149.00
QUANTUM 40AT DRIVE 389.00
QUANTUM 40MB HARD DRV 338.00
QUANTUM 80AT DRIVE 699.00
QUANTUM 80MB HARD DRV 548.00
QUANTUM 105MB HRD DRV 589.00
QUANTUM 170MB SCSI HD 898.00
SONY DATA CART/WT 150 .... 24.95
SUPRA DRIVE 30MB 1000 .... 689.00
SUPRA WORD SYNC SCSI 109.00
SUPRADRIVE 20XP 2MB 638.00
SUPRADRIVE 40MB 1000 .... 729.00
SUPRADRIVE 40XP 2MB 748.00
SUPRADRIVE 105XP 2MB 1019.00
SUPRADRIVE 500XP 20MB 548.00
SUPRADRIVE 500XP 40MB 658.00
SUPRADRIVE 500XP 105Q 969.00
SUPRADRIVE A1000 SCSI 185.00
TRUMP CARD SCSI A500 .... 219.00
TRUMPCARD A500 PROF 279.00
TRUMPCARD A2000 PROF 209.00

MEMORY EXPANSION

ADRAM 520 .... 97.95
ADRAM 540 0/4 MEG INT 119.00
ADRAM 560D 2 MEG A540 .... 239.00
EXP-8000+ A500 2 MEG 479.00
MINIMEGS A500 2MB 319.00
MINIMEGS A1000 2MB 298.00
STARBOARD 2 A1000 0K 199.00
STARBOARD 2 UPPR DECK 39.95
SUPRARAM 500 1/2 MEG 61.95
SUPRARAM 2000 2MB RAM 219.00
SUPRARAM 2000 4MB RAM 335.00
SUPRARAM 2000 6MB RAM 445.00
SUPRARAM 2000 8MB RAM 555.00
SUPRARAM A500 2MB RAM 239.00
TRUMPCARD META 0/4 .... 159.00

OTHER MISC. HARDWARE

A MAX II MAC EMULATOR 149.00
A-MAX II PACKAGE 469.00
AMINET 500 ETHERNET 499.00
CMI MULTIPORT BOARD 195.00
INTERACT A500 .... 224.00
MAC EPROMS 128K 149.00

MODEMS

AE DATALINK 2000 MNP5 .... 169.00
AE DATALINK EXP MNP-5 .... 199.00
AE DATALINK EXPRESS 179.00
AE DATALK EXP MNP/FAX 239.00
BAUD BANDIT MODEM 105.00
BAUD BANDIT MODEM L5 .... 169.00
GALAXY APOLLO 9600 MODEM . 549.00
GALAXY PIONEER MODEM 249.00
SUPRA 2400 BAUD MODEM 99.95
SUPRA 2400 INT. MODEM 119.00

MONITORS

NEC MULTISYNC 3D 699.00
NEC MULTISYNC IIA 650.00
SEIKO 1440 MULTISYNC 599.00
SONY 1304 MULTISYNC 749.00

PRINTERS

CITIZEN GSX140 24 PIN 349.00
CITIZEN GSX200 9 PIN 195.00
LASERJET III PRINTER 1795.00
STAR NX-2410 PRINTER 339.00
STAR NX1000 II PRINTR 169.00
STAR NX1020 RAINBOW 219.00

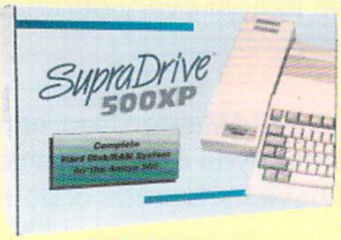
VIDEO HARDWARE

AMIGA VIDEO TERMINAL 314.95
AMIGEN GENLOCK 97.95
COLOR SPLITTER 119.00
DENISE EXTENDER BUS 74.95
DIGI VIEW GOLD V4.0 .... 129.00
DIGIVIEW GOLD 4.0 PAL 134.00
EASYL 500 TABLET 329.00
EASYL 1000 TABLET 359.00
EASYL 2000 TABLET 389.00
FLICK. FIX TO GENLOCK 37.95
FLICKER FIXER 374.00
FLICKER FIXER PAL 399.00
FRAMEBUFFER 589.00
FRAMEGRABBER 569.00
FRAMEGRABBER PAL VERS 659.00
FRAMEGRABBER/256 GRAY 629.00
FRAMEGRABBER/256G PAL 659.00
HAND SCANNER/TOUCH UP 359.00
LENS 16MM NO IRIS 18.95
LENS 16MM W/IRIS 53.95
LIVE! 500 .... 309.00
LIVE! 1000 .... 249.00
LIVE! 2000 .... 349.00
MINIGEN GENLOCK 189.00
MINIGEN PAL GENLOCK 239.00
NERIKI GENLOCK .... CALL
PANASONIC WV1410 .... 189.00
PANASONIC WV1500X 319.00
PROGEN GENLOCK 369.00
SHARP JX100 SCANNER 758.00
SHARP JX300 SCANNER .... CALL
SHARP JX450 SCANNER .... CALL
SPIRIT INTERLOK IGL1 .... 550.00
SUPERGEN 2000S 1350.00
SUPERGEN GENLOCK 649.00
TCRG 102 .... 719.00
VIDI AMIGA FRAMEGRABR 164.00
VIDI CHROME COLOR MOD 29.95
VIDTECH SCANLOCK 789.00
VIDTECH SCANLOCK PAL 1149.00
VIP VIDEO INTERFACE 97.95
X-SPECS 3D 94.95

INPUT DEVICES

A1000 KEYBOARD 64.95
A1352 MOUSE 89.95
APRODRAW 12X12 W/CUR. 549.00
BOING OPTICAL MOUSE 91.95
BOSS JOYSTICK 14.95
CORDLESS MOUSE, THE 92.00
DATA SWITCH VGA 4 WAY 43.95
EPYX 500XJ JOYSTICK 10.95
ERGO STICK 17.95
FREEDOM CONNECTION 25.95
GRAVIS CLEAR JOYSTICK 35.95
GRAVIS MOUSESTICK 64.95
GRAVIS SWITCH JOYSTCK 32.49
LIGHT GUN, PHASAR 32.49
MOUSE MASTER 29.95
MOUSE MATS 6.95
NAVIGATOR JOYSTICK 17.95
PERFECT SOUND ADAPTOR 10.95
POWERPLAYERS JOYSTICK 20.95

CHRISTMAS HARD DRIVE SPECIALS!



GVP HARD DRIVES

NEW PRODUCTS
RICOH 50MB REMOVABLE 829.00

A500
FOR NEW SERIES II A500 HARD DRIVES SEE SEPARATE BOX

A2000
ALL GVP HARD DRIVES ARE THE NEW BLAZING FAST SERIES II WITH 8 MB FAST RAM CAPABILITY
GVP SERIES II /0 .... 159.00
ALL HARD CARD ARE QUANTUM 12MS RELIABLE DRIVES
GVP SERIES II /40Q 495.00
GVP SERIES II /52Q 595.00
GVP SERIES II /80Q 739.00
GVP SERIES II /100Q 789.00
GVP SERIES II /170Q 1049.00

GVP SYQUEST 44MB HDD 599.00
GVP SYQUEST CARTRIDGE 90.00
GVP WT-150 TAPE DRIVE 639.00
GVP XC CASE W/SYQUEST 1149.00
GVP XC CASE W/WT-150 .... 989.00
GVP XC CASE/NO DRIVE 179.00

SUPRA

A500
SUPRA 500XP 20MB/512K 528.00
SUPRA 500XP 40MB/512K 628.00
SUPRA 500XP 20MB/2MB 558.00
SUPRA 500XP 40MB/2MB 658.00

A2000
SUPRA WORDSYNC 40Q 428.00
SUPRA WORDSYNC 80Q 588.00
SUPRA WORDSYNC 105Q 648.00
SUPRA 44R EXT W/SCSI 979.00
SUPRA 44R EXT/NO SCSI 809.00
SUPRA 44R INT W/SCSI 809.00

IVS

TRUMP CARD SCSI A2000 .... 127.00
TRUMPCARD A2000 PROF. 209.00
TRUMP CARD SCSI A500 .... 219.00
TRUMPCARD A500 PROF. 279.00
MOUNTING BRACKET, HDD 19.00
TRUMPCARD META 4/0 .... 159.00
TRUMPCARD META 500 4/0 .... 249.00

BARE DRIVES (USE WITH ANY CONTROLLER)

QUANTUM 40MB HARD DRV 324.00
QUANTUM 52MB SLIMLINE 399.00
QUANTUM 80MB HARD DRV 498.00
QUANTUM 105MB HRD DRV 537.00
QUANTUM 170MB SCSI HD 839.00
QUANTUM 210MB HARD DRV 979.00

FREE SEND-FAX!!!

AE High Density Drive $199.00



1.52MB!

Operates as an 880K drive or 1.52 Meg drive and has an electronic eject button.

500 Heavy Duty Power Supply $89.95

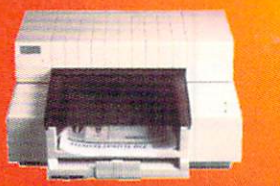
Buy a Datalink Modem with MNP-5 and get Send-FAX capability FREE

- External $228.00
- Internal $175.00

CREATIVE HARDWARE SPECIALS

HP PRINTERS

DESKJET 500	569.00
LASERJET III	1699.00
LASERJET IIP	999.00
PAINTJET	949.00
PAINTJET XL	1899.00



BEST BUYS!

MODEL A2091 DMA HARD DRIVE CONTROLLER (BASIC SAME AS CONTROLLER IN A3000) WITH SOCKETS FOR 2MB OF RAM.
THIS IS THE BEST CONTROLLER FOR MULTITASKING!!!
$149.00
OVERSTOCK SALE!!!

ReadySoft

AMAX II ...$149.00

AMAX II PACKAGE $459.00





2/8 MB Board

ONLY $189

Supra

MEMORY (RAM) CARDS:

SUPRARAM 2000 2MB RAM	189.00
SUPRARAM 2000 4MB RAM	279.00
SUPRARAM 2000 6MB RAM	349.00
SUPRARAM 2000 8MB RAM	429.00
SUPRARAM 500 1/2 MEG	61.95
SUPRARAM A500 2MB RAM	239.00

MODEMS:

SUPRA 2400 BAUD MODEM	99.95
SUPRA 2400 INT. MODEM	119.00
MODEM CABLE ADD	5.00

QUICKJOY III SUPRCHRG	12.95
QUICKJOY JET FIGHTER	17.95
QUICKJOY JUNIOR	9.95
QUICKJOY V SUPERBOARD	22.95
QUICKSHOT 2 JOYSTICK	12.95
QUICKSHOT II PLUS	12.95
SKETCH MASTER 12X18	619.00
SKETCH MASTER	399.00
SLIK STIK JOYSTICK	7.95
SPEED KING JOYSTICK	13.95
STAR CURSOR JOYSTICK	35.95
STIK-GRIPPER	12.95
TAC-2 JOYSTICK	10.95
TRACKBALL MOUSE STYLE	39.95
TRACKBALL, AMTRAC	64.95
TRACKBALL, JOYSTICK	39.95
ULTIMATE SUPERSTICK	38.95
WICO 3-WAY JOYSTICK	22.95
WICO BAT HANDLE STICK	18.95
WICO RED BALL JSTICK	18.95
WINNER JOYSTICK	14.95
ZOOMER JOYSTICK	47.95

ACCESSORIES

CABLES

CABLE A500 IMAGE 1	19.00
CABLE A500 IMAGE 2	19.00
CABLE A500 NULL 8'	19.00
CABLE A500 NULL 25'	29.00
CABLE A500 PARAL 6'	10.00
CABLE A500 PARAL 15'	24.00
CABLE A500 PARAL 25'	29.00
CABLE A500/2000 MODEM	11.00
CABLE A500/SWITCH 6FT	14.95
CABLE A500/SWITCH 10F	14.95
CABLE A1000 DRV LOGIC	18.00
CABLE A1000 IMAGE 1	19.00
CABLE A1000 IMAGE 2	19.00
CABLE A1000 MODEM 6'	15.00
CABLE A1000 NULL 8'	19.00
CABLE A1000 PARAL 10'	23.00
CABLE A2000 FLOPPY DR	18.95
CABLE A2000 KEYBRD EX	9.95
CABLE AMIGA 1080/84SD	19.00
CABLE AMIGA 1084/S	19.00
CABLE AMIGA SONY 1302	19.00
CABLE AMIGA TO IIGS	45.00
CABLE AMIGA TO KV1311	29.00
CABLE AMIGA TO MITSUB	29.00
CABLE AMIGA TO NEC 2	24.00
CABLE AMIGA TO NEC-3D	30.00
CABLE AMIGA/SONY 2030	22.00
CABLE AMIGEN 1084/S	19.00
CABLE CAMERA BNC/RCA	10.00
CABLE CNT-M/CNT-M 8'	22.00
CABLE D9M/D9F 2'	14.00
CABLE D9M/D9F 4'	15.00
CABLE D9M/D9F 6'	16.00
CABLE D9M/D9F 10'	19.00
CABLE D23F/D9F RCA641	19.00
CABLE D23M/D23F 2'	19.00
CABLE D23M/D23F 3'	19.00
CABLE D23M/D23F 4'	19.00
CABLE D25F/D25F 3'	19.00
CABLE D25F/D25F 8'	18.00
CABLE D25F/D25M 2FT	19.00
CABLE D25M/D23M 2FT	29.95
CABLE D25M/D25F 3'	19.00
CABLE D25M/D25F 8'	14.00
CABLE D25M/D25M 2FT	19.00
CABLE D25M/D25M 3'	19.00
CABLE D25M/D25M 8'	14.00
CABLE EXT SCSI 6'	29.00
CABLE FLICK FIX NEC 2	15.00
CABLE FLICK FIX/MITSU	18.00
CABLE FLICK FX NEC 2A	24.00
CABLE FLICK FX NEC 3D	22.00
CABLE FLICK FX TO VGA	24.95
CABLE FLICK SONY 1302	17.00
CABLE NULL MODEM M/F	17.00
CABLE POWER CORD 6'	9.00
CABLE POWER CORD 10'	14.00
CABLE SCSI 3 CONNECT	24.00
CABLE SCSI RIBBON 2'	16.00
CABLE SCSI RIBBON 3FT	19.00
CABLE SCSI/SEAGATE 8F	19.00
CABLE ST-506 HDD SET	12.00
CABLE TRUMP/SCSI 500	19.00
CABLE TRUMP/SCSI 2000	19.00
CABLE VGA TO 1302 6FT	24.00
GENDER CHNGR DB25 M/M	9.95

DISKETTES/DISK ACCESSORIES

BANX DISKETTE BOX	14.95
CLEANING KIT LARGE	12.95
CLEANING KIT SMALL	5.95
DISKETTE, 3.5" DSDD	0.89
DISKETTES, 50 PACK	44.00
SONY COLOR DISKETTES	13.95
SONY DISK 5.25" 10 PK	7.95
SONY DISK 5.25" DSHD	11.95
SONY DISK 10 PACK	12.95
SONY DISK DSHD 5 PACK	9.95
SONY DISK DSHD 10 PK	19.95
WOODEN DISK BOXES 4 DRWR	65.00
WOODEN DISKBOX 2 DRWR	45.00
WOODEN DISKBOX 3 DRWR	55.00

DUST COVERS

COVER UPS A500 CPU	5.95
COVER UPS A1084 MON	6.95
COVER UPS A1950 MON	6.95
COVER UPS A2000 CPU	5.95
COVER UPS A2000 KEYBD	2.99
COVER UPS A2000 SYSTM	10.95
COVER UPS A3000 CPU	5.95
COVER UPS A3000/A1950	10.95
DESKJET DUST COVER	28.95
LASERJET DUST COVER	24.95
PAINTJET DUST COVER	15.95
SAFESKIN / A500	17.95
SAFESKIN / A1000	17.95
SAFESKIN / A2000	17.95
SAFESKIN / A3000	19.95

POWER DEVICES

AE POWER SUPPLY A500	89.95
BIGFOOT 150 POWER SUP	97.95
POWER SUPPLY HD150	129.95
POWER SUPPLY, IVS	89.95
POWER SUPPLY, SUNTRON	89.95

PRINTER ACCESSORIES

CITIZEN GSX140 COLOR	49.95
CITIZEN RIBBON/BLACK	5.95
DATA SWITCH 4 WAY	22.95
DATA SWITCH	13.95
DESKJET BLK CARTRIDGE	16.95
DESKJET EPSON FX EMUL	59.95
DESKJET INK BLACK	11.95
DESKJET INK BLUE	11.95
DESKJET INK BROWN	11.95
DESKJET INK BURGUNDY	11.95
DESKJET INK CLEANING	3.95
DESKJET INK FULL COLR	28.95
DESKJET INK GOLD	11.95
DESKJET INK RED	11.95
DESKJET INK YELLOW	11.95
MONITOR STAND A500	27.95
OKIMATE BLACK RIBBON	4.99
OKIMATE COLOR RIBBON	5.99
PAINTJET BLK CARTRIDG	25.95
PAINTJET COLOR CRTRDG	29.95
PAINTJET CUT PAPER	17.95
PAINTJET PAPER CATCH	22.95
PAINTJET PRINTR STAND	64.95
PAINTJET TRANS FILM	54.95
PAINTJET XL CART CYAN	24.95
PAINTJET XL CART MAGN	24.95
PAINTJET XL CART YELO	24.95
PAINTJET Z-FOLD PAPER	17.95
PLOTTER IN A CARTRIDG	295.00
PLOTTER IN CART P E	289.00
PRINTER BUFFER 256K	129.00
PRINTER STAND	20.95
PRINTER STAND 132 COL	49.95
PRINTERFACE	79.95
RUGGERWRITTER RIBBONS	39.95
STAR NX-1000 RIBBON	3.95
STAR NX-2400 RIBBON	7.49
STAR NX2410 RIBBON	7.49
STAR RAINBOW RIBBON	8.95

MISC. ACCESSORIES

A1000 KEYBOARD ADAPTR	19.95
AUTO DROID	50.95
COMPUTER SERVICE KIT	18.95
COPY/CAMERA STAND	59.95
DIGI DROID	67.95
FLICKER MASTER	12.95
SURGE MASTER	18.95
TRUMPCARD MOUNT BRACK	23.95

DIGITAL CREATIONS

- PAINT, DIGITIZE AND DISPLAY FULL NTSC VIDEO ON ANY 1MEG AMIGA!
- DISPLAY AND CAPTURE FULL COLOR 24-BIT IMAGES.
- WORKS WITH ALL POPULAR 3D PROGRAMS.
- ANIMATE IN FULL NTSC COLOR.

$399



VIDEO TOASTER!!!



$1495

YES! IT'S HERE!!!

XETEC

CDx-650i internal system for the A2000/2500	$589.00
CDx-650e external system for all models	$689.00

CD-ROM for the Amiga®



Bodega Bay

- 4 A2000 slots, and 3 of those are also IBM compatible
- Internal 200 watt power supply
- Works with any A2000 card
- Two 5.25" drive bays and a 3.5" hard drive mounting area

Call for Prices



SEIKO CM-1440

THE BEST MULTISYNC MONITOR

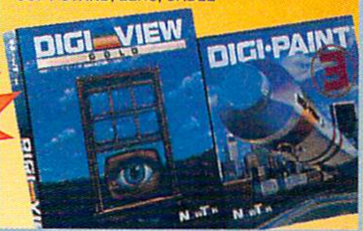


- 14" SuperFine Pitch Trinitron
- Resolution up to 1024 x 768
- .25mm dot pitch
- Anti glare silica coating
- Works on all Amigas
- Includes a FREE cable for the A3000

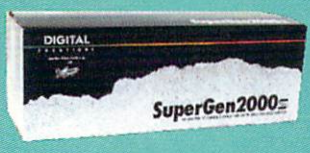
$599

NEWTEK

DIGI VIEW GOLD V4.0	129.00
DIGI PAINT 3	61.00
PANASONIC WV1410	189.00
PANASONIC WV1500X	319.00
COPY/CAMERA STAND	59.95
SUPER BUNDLE/DIGIVIEW DIGIVIEW GOLD 4.0, WV1410 CAMERA, COPY STAND, LENS, CABLE	399.00



DIGITAL CREATIONS

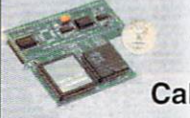


SUPERGEN 2000S	$1350
SUPERGEN 2000SC	CALL
SUPERGEN GENLOCK	649.00

ATONCE

The Ultimate PC/AT Emulator for your Amiga

- Ultra-compact design
- Easy 10 minute installation - NO SOLDERING
- FULL 640KB OF DOS MEMORY ON 1MB Amigas
- Works with all autoconfigure autobooting Commodore compatible hard drive systems
- Emulates CGA, Hercules and other video cards
- Can be used with a A2000 with a special adapter



Call for Prices

Creative COMPUTERS™

U.S. ORDERS ONLY:
800-872-8882
Canada: 1-800-548-2512

CUSTOMER SERVICE OR ORDER STATUS
213-214-0000

NEW XMAS HOURS

4453 Redondo Beach Blvd., Lawndale, CA 90260 - Mon-Fri 7AM-7PM Sat 8-6 PST - FAX: 213-214-0932

BLITZ BASIC MAKES IT HAPPEN

A SUBSET OF BASIC WITH EMPHASIS ON STATEMENTS THAT CONTROL THE AMIGA'S SOUND AND GRAPHICS HARDWARE. A FEW LINES OF CODE HAS A DPAINT IMAGE MOVING ACROSS THE SCREEN. BECAUSE B.B. IS A COMPILER, THE NATIVE CODE GENERATED IS FAST AND STANDALONE

$139



Thier Finest Hour - The Battle of Britain 39.95



Where in Time is Carmen San Diego 36.95

GRAPHIC SOFTWARE

HOT GRAPHICS AND VIDEO SOFTWARE

3D TEXT ANIMATOR	29.95
ANIMAGIC	61.95
DIGIMATE III	23.95
DISNEY ANIMATION	99.95
MOVIE SETTER	64.95
PAGE FLIPPER PLUS F/X	87.95
PHOTON CELL ANIMATOR	87.95
SCULPT ANIMATE 4-D	350.00
SCULPT ANIMATE 4-D JR	89.95
TURBO SILVER 3.0	74.95
VIDEOSCAPE 3D	119.00

CLIP ART

AIRCRAFT PICS	31.95
AIRSHIPS/20TH SCULPT	23.95
AIRSHIPS/20TH TSILVER	23.95
ART COMPANION	19.95
ART GALLERY 1 & 2	25.95
ART GALLERY FANTASY	23.95
CAD PARTS AEGIS/DRAW	14.95
CHRISTMAS PICS	21.95
CLIP ART #1	12.95
CLIP ART #2	12.95
CLIP ART #3	12.95
CLIP ART #4	12.95
CLIP ART #5	12.95
CLIP ART #6	12.95
CLIP ART #7	12.95
CLIP ART #8 (XMAS)	12.95
COMICSETTER FUNNYDATA	20.95
COMICSETTER HERO DATA	20.95
COMICSETTER SF DATA	21.95
DES DISK, ARCHTEC SCP	22.95
DES DISK, ARCHTEC TSL	22.95
DES DISK, ARCHTEC VSP	22.95
DES DISK, FUTURE - SCP	22.95
DES DISK, FUTURE - TSL	22.95
DES DISK, FUTURE - VSP	22.95
DES DISK, HUMAN - SCP	22.95
DES DISK, HUMAN - TSL	22.95
DES DISK, HUMAN - VSP	22.95
DES DISK, INTER. - TSL	22.95
DES DISK, INTER. - VSP	22.95
DES DISK, INTER. -SCP	22.95
DES DISK, MICROB - SCP	22.95
DES DISK, MICROB - TSL	22.95
DES DISK, MICROB - VSP	22.95
DES DISK, WOODLND VSP	25.95
DINOSAUR DESIGN SCULP	25.95
DINOSAUR DESIGN TSILV	25.95
DINOSAUR DESIGN VIDSC	25.95
DOUGS MATH AQUA LIB 3	14.95
ECLIPS PROFESSIONAL	60.95
FONTS AND BORDERS	22.95
FREDS BUTTERFLIES 1	31.95
FREDS FLOWERS DISK 1	31.95
GALLERY 3-D	51.95
PHOTON PAINT EXP. DSK	19.95
PRO FILLS	17.95
PROCLIPS	35.95
PROF. PAGE STRUCTURED	38.95
SPACE VEHICLES	40.95
STARSHIPS 2050 SCULPT	29.95
STARSHIPS 2050 TSILV	29.95
SUPER CLIPS 1	18.95
SUPER CLIPS 2	18.95
SUPER CLIPS 3	18.95

FONTS

ASHAS CALLIGRA FONTS	29.95
FANCY 3D FONTS	46.95
FANCY 3D FONTS SILVER	46.95
INTERFONTS	69.95
KARA ANIMFONTS 1	29.95
KARA ANIMFONTS 2	29.95
KARA FONTS HEADLINES	44.95
KARA FONTS HEADLINES2	39.95
KARA FONTS SUBHEADS	39.95
MAP PICS - WORLD	37.95
MASTERPIECE FONTS	159.95
NEWSLETTER FONTS COLR	29.95
NTF AMIGA ROMAN FONTS	10.00
NTF AMIGA SANS FONTS	10.00
NTF COMIX FONTS	10.00
NTF FANCY FONTS	10.00
PAGESTREAM FONTS # 1-19 EA.	25.95
PIC-MAGIC PACKAGE ONE	58.95
PRO FONTS VOL I	22.95
PRO FONTS VOL II	22.95
PROF. PAGE OUTLINE CG	129.00
PROF. PAGE TEMPLATES	38.95
STORYBOOK CAPITALS	29.95
TATE FONTS	45.95
ZUMA FONTS 1-4 PACK	59.95
ZUMA FONTS VOL 5	20.95
ZUMA FONTS VOL. 1	20.95
ZUMA FONTS VOL. 2	20.95
ZUMA FONTS VOL. 3	20.95
ZUMA FONTS VOL. 4	20.95
KARA ANIMFONTS 3	29.95
KARA FONTS STARFIELDS	34.95
MEGA PAINT (24 BIT)	179.00
MODELER 3D	64.95
MY PAINT 2.0	29.95
MY PAINT DATA DISK #1	19.95
MY PAINT DATA DISK #2	19.95
PAGE RENDER 3D	93.95
PHOTON PAINT 2.0	99.95
PIXMATE	40.95
PURE COLOR	16.95
SCULPT 3DXL	109.00
TURBO SILVER/TERRAIN	89.95
VISTA	58.95
VISTA PAL	58.95

RENDERING/NEW GRAPHICS PROGRAMS

3 D PROFESSIONAL	299.00
3 D PROFESSIONAL PAL	309.00
BROADCAST TITLER II	229.00
BROADCAST TITLER PAL	239.00
BUDDY SYS/DPAINT III	29.95
CALIGARI CONSUMER	162.00
DELUXE PAINT III	99.95
DELUXEHELP DPAINT III	29.95
DESIGN 3D	64.95
DIGI PAINT 3	58.95
DIGIPAINT 3 PAL	58.95
GOLD DISK DECORATOR	34.95
GOLD DISK DESIGNER	34.95
GOLD DISK PUBLISHER	34.95
GOLD DISK VIDEO	34.95
HAM IT UP	23.95
HOME BUILDERS CAD 2.0	124.00
IMAGINE	CALL

MISC. GRAPHICS

ACAD TRANSLATOR	139.95
ANALYTIC ART	36.95
ART DEPARTMENT	52.95
AUTOSCRIPT	81.95
BUTCHER 2.0	25.95
CELLPRO	52.95
CREDIT TEXT SCROLLER	CALL
DELUXE VIDEO III	69.95
DIGIWORKS 3D	84.95
DIRECTOR, THE	41.95
DIRECTORS TOOLKIT	23.95
DOUG'S MATH AQUARIUM	49.95
DOUGS COLOR COMMANDER	19.95
FRACTAL PRO	50.95
FRAMEGRABBER V2 SFTWR	58.95
IMAGE LINK	119.00
INTERCHANGE	29.95
INTERCHANGE TSLV MODL	18.95
INVISION PLUS	193.00
MAP PICS - US	34.95
MOVIECLIPS GENERAL 1	22.95
PERFORMER (ELAN)	97.95
PHOTON TRANSPORT CONT	195.95
PHOTON VIDEO EDLP	349.00
PIXEL 3D AUTOTRACING	52.95
PRO VIDEO GOLD	179.00
PRO VIDEO PLUS PAL	199.95
PRO VIDEO POST	209.00
PRO/MOTION	58.95
RESEP	51.95
ROLL 'EM TELEPROMPTER	87.95
SCENE GENERATOR	29.95
SUPER BUNDLE/DIGIPNT3	449.00
SUPER BUNDLE/DIGIVIEW	399.00
TERRAIN FOR TURBOSILV	19.95
TITLE PAGE	117.00
TV GRAPHICS	29.95
TV*SHOW	58.95
TV*TEXT PROFESSIONAL	99.95
VIDEO EFFECTS 3D	119.00
VIDEO EFFECTS 3D PAL	139.95
VIDEO PAGE	93.95
VIDGEN 1.0	93.95

DRAWING/CAD

AEGIS DRAW 2000	163.00
DECKBUILDERS CAD	59.95
FLO FLOORPLAN CNSTRCT	29.95
HOMEBUILDERS SCULPT	69.95
HOMEBUILDERS_CHOICE	50.95
HOMEBUILDERS_LIB_1	26.95
HOMEBUILDERS_PRINT	72.95
INTROCAD	46.95
INTROCAD PLUS	88.95
PROFESSIONAL DRAW 2.0	129.00
ULTRA DESIGN	CALL
XCAD DESIGNER	89.95
XCAD DESIGNER PAL	89.95
XCAD PROFESSIONAL	259.00
XCAD PROFESSIONAL PAL	289.00
XSHELL	124.95

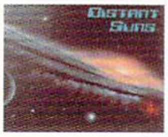
LATTICE C 5.1



THE STANDARD COMPLETE C PROGRAMMING LANGUAGE FOR THE AMIGA

$199

Virtual Reality Laboratories



Explore the Universe!
$40.95



A unique new Virtual Reality landscape explorer
$58.95

MUSIC SOFTWARE

MUSIC EDITOR/LIBRARIAN

DR. T'S 4-OP ED/LIB	87.95
DR. T'S CZ CARTRIDGE	61.95
DR. T'S CZ RIDER	87.95
DR. T'S D-50 ED/LIB	90.95
DR. T'S D-110 ED/LIB	87.95
DR. T'S DX7 ED/LIB	90.95
DR. T'S E-MU PROTEUS	90.95
DR. T'S ESQ-APADE 1	87.95
DR. T'S KAWAI K-1	87.95
DR. T'S KAWAI K-5	90.95
DR. T'S LEXICON	90.95
DR. T'S M-1 ED/LIB	87.95
DR. T'S MATRIX-6	87.95
DR. T'S MT-32 ED/LIB	87.95
MIDIVU	29.95
SOUND QUEST/MIDIQUEST	148.95

MISC. MUSIC

BARS AND PIPES	169.00
BARS AND PIPES MULTI	34.95
BARS AND PIPES MUS A	34.95
BARS AND PIPES MUS B	34.95
BARS AND PIPES SOUNDS	34.95
DR. T'S BACH SONGBOOK	17.95
DR. T'S COPYIST APPR.	75.95
DR. T'S COPYIST DTP	190.00
DR. T'S DR. DRUMS	17.95
DR. T'S DR. KEYS	17.95
DR. T'S KCS	159.95
DR. T'S KCS LEVEL II	224.00
DR. T'S KCS/COPYIST	219.00
DR. T'S MIDI REC. STD	40.95
DYNAMIC STUDIO	138.00
HYPERCHORD	92.95
MASTER SOUND	53.95
MASTER TRACKS PRO	259.95
MUSIC X	119.00
PIXOUND	59.95
PRO MIDI STUDIO	124.00
PROSOUND GOLD	77.95
SONIX	51.95
SOUNDTRAX VOL 1	14.95
SOUNDTRAX VOL 2	14.95
STUDIO MAGIC	49.95
SYNTHIA II	73.95
SYNTHIA PROFESSIONAL	239.00
TIGER CUB	58.95
TRAX MIDI STUDIO	58.95

SAMPLER/EDITOR SOFTWARE

AUDIOMASTER III	64.95
BARS AND PIPES RULES	35.95
PHANTOM MIDI INTERFCE	189.00
QUARTET	44.95

UTILITY SOFTWARE

MISC. UTILITIES

AMI ALIGNMENT SYSTEM	29.95
AMIGA DOS TOOLBOX	38.95
B.A.D. DISK OPTIMIZER	29.95
CROSS DOS	25.95
DISK MANAGER MAC	78.95
DISK MECHANIC, THE	52.95
DISK TO DISK	29.95
DISKMASTER	29.95
DOCTOR AMI	29.95
DOS TO DOS	32.49
DUNLAP UTILITIES	46.95
EXPRESS COPY	27.95
FACC II	21.95
MAC 2 DOS	90.95
PREMIER HARV LASER 20	20.95
SCANNERY	195.00
ULTRACARD	31.95
ULTRACARD PLUS	64.95
VOREC ONE	117.00
W SHELL	31.95
WBEXTRAS	5.00

BACKUP SOFTWARE

D.U.D.E.	29.95
FAT TRACKS	35.95
PROJECT D	31.95
QUARTERBACK	40.95
RAW COPY 1.3	34.95
REAPER DISK COPY	29.95
SUPERBACK HD UTILITY	51.95
X-COPY VERSION 2.0!	25.95

PRINTER UTILITIES

DJ HELPER	29.95
FINE PRINT	31.95
PALETTE PRINTER	19.95
PIXELSCRIPT V 1.1	89.95
SUPER_DJ V2.0	15.95

TELECOMMUNICATIONS

ATALK III	64.95
BAUD BANDIT	29.95
BBS PC	91.95
ONLINE PLATINUM	35.95
SKYLINE BBS V1.2	97.95

PROGRAMMING

AC BASIC	129.95
AC FORTRAN 77	469.00
AC FORTRAN	195.00
ADAPT 680 X 0	69.95
AMIGA LOGO	58.95
AMIGA VISION	99.00
AREXX	29.95
AZTEC C COMPILER	195.00
AZTEC C PROFESSIONAL	129.00
BENCHMARK C LIBRARY	62.95
BENCHMARK IFF LIBRARY	62.95
BENCHMARK MODULA-2	124.00
BENCHMARK SIMPLE LIBR	58.95
BENCHMARK SOURCE LVL.	93.95
CAPE 68K ASSEM 2.5	52.95
DEVPAC AMIGA ASSEMBLR	64.95
HISOFT BASIC PROFESSN	104.00
INOVATOOLS I	51.95
JFORTH PROFESSIONAL	124.00
LATTICE C SAS/C	159.00
LATTICE C++	239.00
LINT	64.95
METASCOPE DEBUGGER	59.95
OTG DSM -DISASSEMBLER	43.95
POWER WINDOWS 2.5	52.95
SOURCE LEVEL DEBUGGER	48.95

NEW PROGRAMMING/ UTILITIES

BLITZ BASIC	139.00
BYTE 'N' BACK BACKUP	40.95
CANDO PROPAK 1	23.95
CINELINK FOR IMAGLINK	175.00
INTERACT A2000 SOFTWR	73.95
MINDLINK TELECOM	28.95
QUARTERBACK TOOLS	52.95
STERLING SERVICE BBS	84.95
TGALINK FOR IMAGELINK	175.00

PROWRITE 3.0

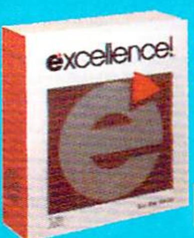


New Horizon's new word processor takes on all challengers with features like:

- 100,000 word Spelling Checker
- Thesaurus w/300,000 word cross references
- Import any HAM or IFF image
- Adjustable defaults for ALL program settings!
- Multiple fonts, sizes, styles
- Arexx Support
- Wrap text around pictures

$94.95

EXCELLENCE 2.0



THE WYSIWYG WORD-PROCESSOR WITH VIRTUAL MEMORY AND MORE...

$129
MSS

PROFESSIONAL PAGE 2.0

The Best in Desktop Publishing



New Lower Price!

$159

BUY PROFESSIONAL PAGE 1.3 NOW AND GET A FREE UPGRADE TO VERSION 2.0



Falcon Mission II .. 17.95



Indianapolis 34.95

WordPerfect



The computer industry's best-selling word processor - for the Amiga

$159

Turbo Silver 3.0



Incredibly powerful ray-tracing at an incredibly low price

$69

Circle 199 on Reader Service card.

NEW: EVEN LOWER PRICES

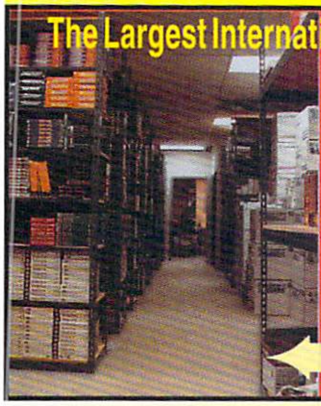
THE BEST SERVICE AND PRICES FOR YOUR CREATIVE COMPUTER™

Creative COMPUTERS

ANNOUNCING THE CREATIVE COMPUTERS LOW PRICE GUARANTEE

Creative Computers, the service and low-price leader, has just reduced all of its prices even more. Check out the prices in this ad, then compare them to the competition's. If you find a lower price anywhere, we'll beat it!**

The Largest International Dealer of Amiga Products in the World!



Now with even ***LARGER*** facilities and a ***LARGER*** stock

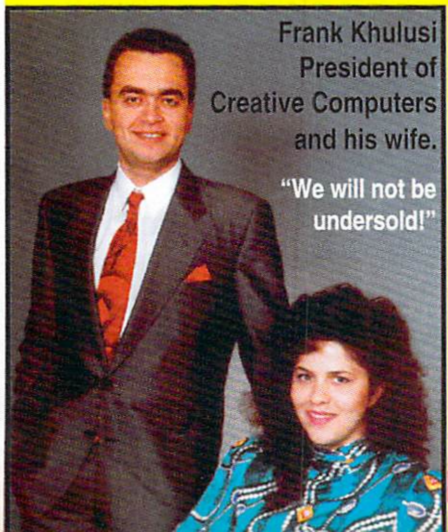
- The Best Service
- The Lowest Prices
- The Largest Selection

(One of the halls in the warehouse)

CREATIVE COMPUTERS' STORES

(Store's Support At Mail Order Prices™)

- South Bay: 4453 Redondo Beach Blvd. Lawndale, CA 90260. (213) 542-2292
- Westside: 318 Wilshire Blvd. Santa Monica, CA 90401. (213) 301-9074
- Ventura: 2112 E. Thompson Dr. Ventura, CA 93001. (805) 652-0325



Our South Bay *Superstore* in Southern California



ANNOUNCING THE CREATIVE COMPUTERS EXCLUSIVE MONEY BACK GUARANTEE PROGRAM (CC-MBG)

Now and through December 31st, 1990, when you purchase any accelerators, floppy drives, memory expansions, hard drives, or hard drive controllers from Creative Computers, you are protected with a full 30-Day, No-questions-asked Money Back Guarantee!

Are you waiting to buy a hard drive this Christmas but don't want to be stuck with a lemon? Are you tired of waiting for your Amiga to compute but don't know what an accelerator will mean in practical terms to you? You need not wait any longer. Just buy it from us, and if you don't like it, send it back for a full refund!

CC-MBG Rules: Limited-time offer only applies to above listed categories. You must call customer service to obtain a Return Authorization number before sending item back. Item must be in original condition and in original packaging. No damaged items will be accepted. Refunds issued within 14 days of receipt of the returned item.



Circle 199 on Reader Service card.

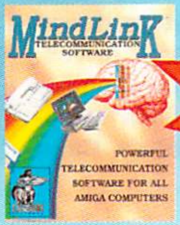
Prices and promotions valid from Dec. 1st, 1990 thru Dec. 31th, 1990

Centaur puts the Fun in Functional

CENTAUR SOFTWARE

MINDLINK

A POWERFUL, YET EASY TO USE TELECOMUNICATIONS PACKAGE

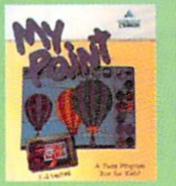


NEW! $28.95

- SELECTABLE DATA SPEEDS FROM 300 BAUD TO MIDI (31.25K BAUD).
- INTEGRATED SCRIPT LANGUAGE FOR DESIGNING YOUR OWN MODEM UTILITIES
- INTEGRATED CLI AND TEXT EDITOR
- SUPPORTS X-MODEM, Y-MODEM AND Z-MODEM PROTOCOLS
- CHAT MODE LETS YOU TALK WHILE TRANSFERRING FILES
- REAL-TIME MONITORING OF ON-LINE CHARGES
- ENTER COMMANDS WHILE ON-LINE BY CLICKING ANY WORD OR CHARACTER ON THE SCREEN
- 20 PASSWORD PROTECTED FUNCTION KEYS FOR SECURE LOG-IN INFORMATION
- USER DEFINABLE ASCII TABLE (SEND AND RECEIVE)
- FULLY MULTITASKING

My Paint 2.0

THE PAINT PROGRAM JUST FOR KIDS
EDUCATOR APPROVED AND CLASSROOM TESTED



- NEW LOOK
- FASTER OPERATION
- FULL PRINTING CAPABILITIES
- IMPROVED HARD DISK SUPPORT
- ENHANCED INTERFACE
- COLORING BOOK OF 28 NEW PICTURES INCLUDED (INCLUDES 28 SAMPLED SOUNDS).
- LOADS PICTURES FROM OTHER PROGRAMS
- COLORFUL ANIMATED ICONS FOR ALL TOOLS
- SPECIAL EFFECTS

ONLY 29.95

MY PAINT DATA DISK #1 .... 19.95
MY PAINT DATA DISK #2 .... 19.95

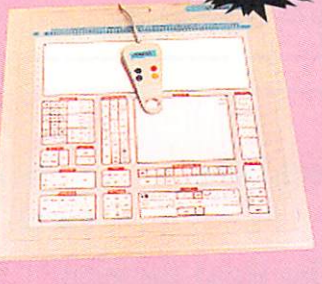
PRO BOARD 289.00
PRO NET 289.00
FOR A LIMITED TIME ONLY, BUY PRO NET AND GET PRO BOARD FOR FREE
THESE ARE PROFESSIONAL VERSIONS OF THE ITEMS BELOW.
OFFER EXPIRES JAN. 31ST, 1990.

MAXI-SKETCH

THE BEST GRAPHIC DRAWING TABLET FOR ALL AMIGAS

- Directly reconfigure from tablet setup area
- Buzzer on/off setting increases cursor button feeling and allown easy verification of table configuration setting
- EEPROM memory allows storage of user default configuration
- Auto configuring hardware interface
- 1000 Dots per inch resolution
- Emulates a variety of drawing tablets
- INCLUDES CURSOR AND STYLUS

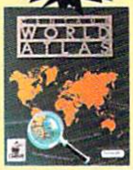
$478.00



WORLD ATLAS 2.0

- NOW ON 4 DISKS!
- INFORMATION ON MORE THAN 170 COUNTRIES
- 255 MAPS ADDED IN 2.0
- MULTITASKING
- NOW WITH A BUILT-IN EDITOR

$32.49



BYTE BY BYTE

DISTRIBUTED BY CENTAUR SOFTWARE

SCULPT ANIMATE 4D JR. $89.95
Create, render and animate solid object with the same easy-to-use interface as 4D (no ray tracing).

SCULPT ANIMATE 4D $350
The most sophisticated and powerful 3D animation and ray-tracing software available on ANY PERSONAL COMPUTER! IT'S THE EASIEST TO USE!

$350



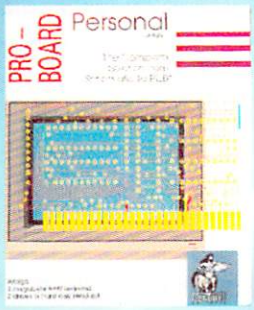
PRO-NET PERSONAL $99.95

- CREATE SCHEMATICS BY PLACING PRE-DRAWN DEVICES ON THE SCREEN
- CREATE FLOW CHARTS, BLOCK DIAGRAMS, TIMING DIAGRAMS, AND MORE...
- POWERFUL TOOLS FOR CREATING NEW DEVICES
- DEMORGAN EQUIVALENCE, SIGNAL NAME STEPPING, GRID CONTROL, A TO E PAPER SIZE, RUBBERBANDING, MOVE, COPY, REPEAT AND MUCH MUCH MORE!!!
- SUPPORTS DOT MATRIX AND LASER PRINTERS, AND PLOTTERS
- PLUS MANY MORE FEATURES! NO ROOM TO LIST!



PRO-BOARD PERSONAL $99.95

- SUPPORTS FOUR LAYERS WITH ANY VIAS
- UNLIMITED LAYERS WITH BURIED VIAS
- AUTOMATIC SILK SCREEN
- SURFACE MOUNT TECHNOLOGY SUPPORT
- MULTIPLE WIDTH WIDE TRACES
- INTELLIGENT SINGLE TRACE AUTO-ROUTE WITH 45 DEGREE CAPABILITY
- GENERATES X-Y COORDINATES AUTOMATICALLY
- PLUS MANY MORE FEATURES! NO ROOM TO LIST!



BOING OPTICAL MOUSE



$89.95

THIS IS THE BEST-SELLING OPTICAL MOUSE FOR THE AMIGA

- Optical technology eliminates friction and momentum for super precise handling
- No-moving-part construction for increased reliability
- Middle button makes it compatible with A2024 software, XWindows and UNIX
- Easy plug-in compatibility with ALL Amiga computers

SPECIAL: NOW WITH A FREE D.U.D.E. (A $39.95 VALUE). BOTH THE MOUSE AND THE DIRECTORY UTILITY/ DOS ENHANCER WORK ON THE AMIGA 3000 AND SYSTEM 2.0

SOLID PRODUCTS and SOLID SUPPORT from

GENERAL BUSINESS

Advantage (The)	129
Analyze 2.0	60
BGraphics	126
City Desk V2.0	129
DBMAN V	209
Excellence V2.0 (1MB)	150
Family Tree (Your)	35
Flow	65
Kindwords	69
Microlawyer	39
NAG Plus V3.1	52
Office*	**189**
P.H.A.S.A.R. V4.0	59
Pagesetter II	84
Page Stream V2.0	**192**
Page Stream Fonts ea	27
Pen Pal	99
Professional Draw 2.0	**139**
Professional Page 1.3	189
Professional Page 2.0	**call**
Proscript for Prowrite	32
Prowrite V3.0	114
Publisher Plus	64
Saxon Publisher	**279**
Scribble - Platinum Edition	72
Security Analyst	48
Service Industry Accounting	252
Superbase Personal	53
Superbase Personal 2	99
Superbase Professional V3.0	225
Superplan	99
Top Form	59
Word Perfect v4.1.11	149
Works - Platinum Edition	140

BOOKS

Advanced Amiga Basic	$15
Amiga Basic Inside&Out+	20
Amiga C for Beginners+	15
Amiga C for Advanced Progs+	25
Amiga Companion 2nd Edition	15
Amiga DOS Inside & Out+	17
Amiga DOS Quick Ref Manual	8
Amiga Desktop Video Guide	17
Amiga Graphics Inside and Out+	27
Amiga Hardware Reference Review	18
Amiga Machine Language+	17
Amiga Printers:Inside&Out	**28**
Amiga Programmer's Handbook 2	20
Amiga System Prog's Guide+	27
Amiga Tips & Tricks+	17
Amiga for Beginners	15
Best of Amiga Tips&Tricks	**24**
C Primer Plus	21
Dungeon Master Hint Book	11
Making Music on the Amiga	**28**
ROM Kernal Ref:Exec,Lib&Devs	28
ROM Kernal Ref:Includes&AutoDoc	27

ENTERTAINMENT

688 Attack Sub	$34
ABC Monday Night Football	**39**
AD&D - Champions of Krynn	35
AD&D - Curse of the Azure Bonds	**34**
AD&D - Dragon Strike	**34**
AD&D - Pool of Radiance	**35**
Altered Beast	34
Anarchy	**27**
Bandit Kings of Ancient China	**39**
Bar Games	**30**
Battle Squadron	24
Black Gold	**27**
Blades of Steel	**30**
Blue Angels	30
Bride of the Robot	26
Bridge 6.0	27
Buck Rogers*	**34**
Check Mate	**36**
Codename: Iceman	**39**
Colonel's Bequest	**39**
Dragon's Lair II: Singe's Castle	46
Dragon Lord*	**34**
Dragonscape	27
Dragon Wars	**34**
Drakkhen	39
Dungeon Master	26
Dungeon Master 2*	**27**
Earl Weaver Baseball	35
Earl Weaver Stats '89 Disk	**14**
F-29 Retaliator*	**34**
Falcon	33
Flood	27
Future Wars	33
Genghis Khan	**39**
Ghost Busters II	27

EDUCATION

Algebra Plus	$33
Algebra Plus Vol2	**33**
Barney Bear Goes to School	23
Barney Bear Goes to the Farm	23
Barney Bear Goes to Space	**23**
Discover Alphabet	13
Distant Suns (Galileo 3)	46
Katie's Farm	**27**
Math Blaster Plus	33
Mavis Beacon Typing	34
McGee	**27**
Mixed Up Mother Goose	20
MyPaint	33
MyPaint Data Disk 1	17
MyPaint Data Disk 2	17
Rhyming Notebook	**29**
Talking Story Book	20
Where Europe is Carmen SanDiego	33
Where in Time is Carmen SanDiego	**33**
Where in USA is Carmen SanDiego	33
Where in World is Carmen SanDiego	30
World Atlas 2.0	39

ENTERTAINMENT

Hardball II	33
Harpoon	**41**
Heat Wave: Offshore Racing	30
Hero's Quest	39
Highway Patrol 2	**30**
Hoyles Games 2	**23**
Ice Hockey: Wayne Gretzky	35
Immortal	**33**
Imperium	**27**
Indianapolis 500	**34**
Ishido:Way of the Stones	**36**
It Came From the Desert	33
It Came From the Desert II	14
Jack Nichlaus' Unlimited Golf	**39**
Kings Quest 4	39
Leisure Suit Larry 3	39
Loom	**41**
M1 Tank Platoon	**39**
Matrix Marauders	**27**
Midwinter	**27**
Might & Magic 2	41
Mutant Priestess	30
Neuromancer	31
Nobunga's Ambition*	**39**
Operation Spruance	33
Overrun	**41**
Pictionary	**27**
Pirates!	30
Planet of Lust	24
Police Quest 2	**39**
Populus	34
Power Pinball	**27**
Powermonger*	**34**
Pro Football Simulation	23
Projectyle	27
Red Storm Rising	**36**
Rings of Medusa	33
Second Front	**34**
Sextimates	33
Sex Vixens from Space	25
Shadow of the Beast	27
Shadow of the Beast 2	**39**
Shark Attack	26
Sim City	30
Sim City Terrain Editor	15
Spherical	17
Storm Across Europe	41
Streed Rod	27
Strike Aces	**33**
Tennis Cup	27
Test Drive 2: The Duel	33
Test Drive 2:European Chalenge	13
The Colony	**33**
The Killing Game Show	**30**
The Plague	**27**
Their Finest Hour:Battle Britain	41
Tunnels of Armageddon	27
Ultima IV	39
Unreal	**34**
Weltris	23
Wings	**34**
Wings of Fury	**27**

GRAPHICS/VIDEO

3D Professional	320
3D Professional Video	19
AniMagic	91
Animation Soundtrack	88
Art Department	59
Art Department Prof.*	**129**
Autodroid	50
AutoScript	84
Broadcast Titler	193
Broadcast Titler II	**249**
Color Splitter Auto Cable	45
Credit Text Scroller	27
Deluxe Paint Version 3	99
Deluxe Print 2	54
Deluxe Video 3	99
Digimate 3	27
Digipaint 3	69
Digiview v4.0 (for 500/2000)	139
Digiworks 3D	84
Director	49
Director - Toolkit	29
Disney Animation Studio	**119**
Draw 2000	169
Eclips	65
Genesis*	**97**
Graphics Starter Kit	**65**
Home Builder's CAD	135
Imagine*	**224**
Interchange	33
Interchange T.Silver module	20
Intro CAD Plus	108
Invision Plus	219
Kara Fonts	call
Masterpiece 3D Fonts	**65**
Media Line Dsktp & Video Package	24
Outline Fonts	129
Palette Printer	27
Performer 2.0	**97**
Pixmate	45
PrintMaster Plus	33
ProMotion	65
Pro Video Post	224
Scene Generator	33
Sculpt/Animate 4D	389
Sculpt 3DXL	116
Showmaker*	**275**
Thinker	52
Turbo Silver w/Terrain	139
TV Text Professional	109
Ultra Design	255
Video Scape 3D 2.0	129
Video Titling Starter Kit	**199**
Vista	65

UTILITIES/LANG.

A Talk III	$65
Adapt 68030 Assembler	120
Amax II - Mac Emulator	159
Ami...Alignment	39
Amiga Vision	109
Amiga Workbench 1.3	24
AmiExpress BBS	**170**
Arexx V1.0	35
Aztec C Prof Pak V5 w/ZEditor	129
B.A.D. Disk Optimizer	32
Baud Bandit	33
Butcher 2.0	25
Can Do	89
CrossDOS V4.0	27
DiskMaster 1.4	33
DOS-2-DOS	39
Diskmaster	33
Doctor Ami..	33
FACCII	25
Imagelink 2.0	**129**
ImageLink TGA Module	**219**
Janus Libraries V2.0	27
Lattice C++	259
Lattice V5.10 Dev Pacakage	205
LOGO	75
MacroPaint	140
Paragon BBS	107
Project D v1.1	33
Quarterback V4.0	49
Quaterback Tools	**59**
Skyline BBS	**109**
Super Card Ami II	**79**
Super Explode	**39**
UltraCard Plus	**65**
X Copy	**33**

SOUND/MUSIC

Audio Master III	**$65**
Bars & Pipes	192
Bars&Pipes Multimedia Kit	**39**
Deluxe Music Construction	65
Dr T Keyboard C. S. Level II	225
Dr T Keyboard C. Seq. V3.0	177
Dr T's Tiger Cub	65
Music-X Jr.	**97**
Music Mouse	52
Perfect Sound A500 V3.0	65
Phantom	161
Sonix	52
Synthia II	81

BRIWALL SUPPORTS OUR SOLDIERS STATIONED IN THE MIDDLE-EAST

This year, during the holiday season we're donating $.50 to the USO for each order we process through the end of December. This money is to be used for the the soldiers serving as part of Operation Desert Shield, and will hopefully add some joy to their holidays away from home. We want them to know that we support them.

1-800-638-5757

Outside USA: (215) 683-5433 Tech Support (215) 683-5699
Customer Service (215)683-5433 FAX (215) 683-8567

- ❑ Visa and MasterCard accepted with NO surcharge
- ❑ Your credit card is not charged until your order is shipped
- ❑ Personal checks (no holding) and money orders accepted
- ❑ COD orders for established customers only. Add $4

SHIPPING

- ❑ All orders received before 3PM will normally be shipped within 2 business days
- ❑ Software shipping charges are $4.50 per order via UPS ground to anywhere in continental USA
- ❑ Hardware shipping charges are $4.50 handling plus actual shipping and insurance charges
- ❑ All UPS shipments are sent signature required
- ❑ 2nd Day Delivery via Federal Express® is available for $12, Next Day Delivery only $15. (any order up to 20 pounds.)

BRIWALL
P.O. Box 129/58 Noble Street
Kutztown, PA 19530
Monday - Friday 9AM-6PM
Saturday 9AM-12Noon

HARPOON
from Three-Sixty

You play the role of NATO Task Force Commander in this wargame simulation of NATO vs. the USSR. Select from many command, tactics, weapons and scenarios choices, with a database of more thn 100 NATO and Soviet weapons systems at your disposal.

Briwall Price $41

For a limited time, get Battle Set #2, with 16 additional scenarios FREE when you buy Harpoon.

MEGA FORTRESS: Flight of the Old Dog
from Three-Sixty

Based on the best selling novel "Flight of the Old dog", MegaFortress simulates the mission flown by a modified B-52 against the Russian laser facility on the Kamchakta peninsula. You must fly the plane at up to 500 MPH while controlling all five major positions within the aircraft.

Briwall Price $41

DAS BOOT: German U-Boat Simulation
from Three-Sixty

Das Boot combines sound, music and historical perspective with state-of-the-art graphics to create an intense and action packed simulation. You must handle five different positions to guard against surface action from aircraft, subs, ships and shore-based installations.

Briwall Price $34

Enchanted Realms
The Premier Adventure Game Magazine for the Amiga

Enchanted Realms covers everything from arcade adventures to fantasy role-playing games, exclusively for the Amiga. Each issue features news, reviews and tips on adventure games, plus a disk with mini-adventure games, editors, and game demos. Issue #3 is now ready for ordering.

Briwall Price $10

BARNEY BEAR MEETS SANTA CLAUS

Santa comes down the chimney and Barney Bear is still awake! So Santa invites Barney on a ride to the North Pole and visit Santa's Toy Factor. This fun learning program for children ages 2-6 includes a scrambled word game, a missing letter game and a complete fill-in-the-colors painting program.

Briwall Price $23

STERLING SERVICE BBS
The Friendly Amiga Bulletin Board Service

Now even beginners can set up a bulletin board system. *Sterling Service* uses Amiga graphics, logical pull-down menus, and intelligent requestors to create an elegant interface that makes setting up and operating your own BBS a breeze.

Briwall Price $97

Your MAIL ORDER SPECIALISTS -- BRiWALL

Supra Corporation

Amiga 2000 Hard Drive Packages
These packages come complete with controller and hard drive, are formatted and ready to use.

Supra Wordsync w/40MB Quantum HD $529
Supra Wordsync w/100MB Quantum HD $827

Amiga 1000 and 500 SupraDrive Packages
These packages come complete with controller, case, power supply, are formatted and ready to use.

	A1000	A500
44MB/Syquest Supra Drive Pkg	$1029	$969
105MB/Quantum Supra Drive Pkg	$989	$929

Amiga 500XP Hard Drive Packages + RAM
20MB with 512K $575 — with 2MB $665
40MB with 512K $699 — with 2MB $785

Over 5 Years in Business



GVP

ACCELERATOR BOARDS!

A3001 - 68030-882/28MHz + 4MB	$1499
A3001 with 40MB Quantum	$1899
A3001 with 80MB Quantum	$2149
	$2699
A3033 - 68030-882/33MHz + 4MB	$CALL
A3050 - 68030-882/50MHz + 4MB	$2450
A500 SERIES II HARD DRIVE SYSTEMS + RAM	$CALL

We carry a COMPLETE line od GVP products! Please call for other products and prices.

Satisfaction Guaranteed

Briwall Hard Drive Packages

These package prices are complete, and include all additional hardware required.

Drive Specs.	Drive Price	GVP SII HC A2000 $169	GVP SII 8/0 A2000 $225	Hardframe A2000 $172	Kronos A2000 $186	Trumpcard A2000 $131	Trmpcd-Prof A2000 $219	Trumpcard A500 $212	Trmpcd-Prof A500 $285	Kronos* A1000 $328
32MB-40ms Seagate-3.5	$282	$447	$501	$450	$463	$412	$497	$492	$561	$612
40MB-11ms Quantum-3.5	$403	$568	$622	$571	$584	$533	$618	$613	$682	$733
44MB-25ms Syquest-5.25	$519	$684	$738	$737	$700	$649	$734	$729	$798	$837
Syquest w/ Case&Cart	$875	$1,040	$1,094	$1,043	$1,056	$1,005	$1,090	$1,085	$1,154	$1,193
48MB-28ms Seagate-3.5	$299	$464	$518	$467	$480	$429	$514	$509	$578	$629
64MB-24ms Seagate-3.5	$369	$534	$588	$537	$550	$499	$584	$579	$648	$699
80MB-11ms Quantum-3.5	$659	$824	$878	$827	$840	$789	$874	$869	$938	$989
84MB-24ms Seagate-3.5	$415	$580	$634	$583	$596	$545	$630	$625	$694	$745
100MB-11ms Quantum-3.5	$649	$814	$868	$817	$830	$779	$864	$859	$928	$979
210MB-11ms Quantum-3.5	$1,058	$1,223	$1,277	$1,226	$1,239	$1,188	$1,273	$1,268	$1,337	$1,388

Briwall Memory Packages

	BOARDS	0K	2MB	4MB	8MB
A2000	8-up! 1MBx1	$138	$250	$370	$602
A2000	Supra 1MBx1	$119	$244	$375	$629
A2000	GVP 8/0 1MB SIMM	$215	$365	$511	$791
A2000	Ramworks 256Kx4	$115	$267	$415	$687
A2000	Baseboard 256Kx4	$119	$272	$420	n/a
A500	ICD 520 256Kx4	$110	$263	n/a	n/a
A500	Xtc Fastram 1MB SIMM	$210	$354	$500	call
A500	Meta4+case 1MB SIMM	$249	$390	$536	n/a
	The following two memory boards are only for use in the respective expansion cases.				
	For Xetec Owners	$90	$240	$386	call
	For Meta4 Owners	$155	$309	$455	n/a

ACCELERATOR BOARDS

MegaMidget Racer A500 030-33MHz	$919
MegaMidget Racer A500 030-25MHz	$709
Midget Racer A2000 w/030 25MHz	$725

CHIPS

4MB (SIMM) for GVP Acc Bd	$599
4MB x 8 bit SIMM	$497
4MB x 1 bit 100ns	$68
DRAM - 1MB x 8 bits SIMM	$79
DRAM - 256KB x 4 bit 80ns ZIP	$12
DRAM - 256KB x 4 bit 70ns	$11
Math Chip 68881 - 20Mhz	$105
Math Chip 68882 - 25Mhz	$249
Micro Proc Chip 68030 - 25Mhz	$276
SCRAM - 1MB x 4 bit 80ns ZIP	$62
SCRAM - 256K x 4 bit 80ns ZIP	$13

DRIVES (FLOPPY)

AE High Density 3.5" ext.	$210
Applied Engineering 3.5" ext.	$109
Calif. Access 880 3.5" ext.	$110
Chinon 3.5" A2000 internal	$86
Master 3A 3.5" external	$110
Meiji 3.5" external	$115
SupraDrive 3.5" ext.	$109

DRIVES (HARD)

50MB Ricoh Removable	**$855**
84MB Seagate 5.25" ST-296N	$391
100MB Connor 3.5" CP3100	$847
135MB Seagate ST-1162N	$829
158MB Micropolis 5.25" 1674-7	$1125
172MB Seagate ST-1201N	$989
204MB Seagate ST-1239N	$1041
330MB Seagate ST-2383	$1489

GENLOCKS

Amigen	$99
Magni 4010 & 4010S	$1629
Minigen	$215
Neriki 1187 YCS	$2039
Neriki Desktop YC	$1269
OmniGen 701	**$1725**
OmniGen 711	**$2485**
SuperGen	$669
SuperGen 2000s	$1869
Vidtech ScanLock VLS-1	$859

MEMORY A500

501-type Clone	$69
EXP-512 512K (501 type)	$53
EXP-8000 2MB	$479
RAM500 Supra (501 Type)	$65
SupraDrive A500 RAM 2MB	$242
WizRAM A500 0.0MB	$95

MIDI/SOUND

A.M.A.S.	$135
CMI External 500/2000	$60
ECE - External A500/1000/2000	$49

MODEMS

Aprotek Mini A500/1000/2000	$79
Baud Bandit	$110
Baud Bandit Level 5	$139
Courier HST 14.4K	$635
Courier HST Dual Std.	**$945**
DataLink A2000 int.	$145
DataLink Express ext.	$189
Supra 2400 w/o cable	$111
Zoom Modem (2400 Bd)	$109

MONITORS

DiamondScan AUM 1381ATS	$569
ICM 135 Stereo	**$299**
Moniterm Viking 1	$1419
NEC Mulitsync 3D	$695
Seiko CM-1440	$675
Sony 1302 (multisync)	$789
Sony PVM-1390	$525

MOUSES

Boing Optical	$99
GI-1000 Optical	$79
M4 Contriver	$49
The Cordless Mouse	$99

PRINTERS

Citizen GSX-140	$369
Citizen GSX-200	$209
Canon PJ1080a Color Ink Jet	$539
HP Deskjet Plus	$795
HP Laser Series IIP	$1179
HP Paint Jet	$1150
Okidata ML-182 Turbo	$339
Qume CrystalPrint Pub. II	$2799
Sharp JX730 (color ink jet)	$1699
Star NX-1000R Rainbow	$219
Printerface	$82

ERASABLE OPTICAL

Tahiti 1GB	$5499
Ricoh 570MB (drive only)	$3499
Sony 640MB (w/1 cartridge)	$4899

SCANNERS

Prof. Scanlab (Softw+Hardw)	$795
Migraph Scanner	$360
Sharp JX-300 Color Scanner	$3649

VIDEO

Amiga Video Terminal	**$299**
Camera Lens 16mm w/variable iris	$49
Camera Panasonic 1500X	$309
Camera Panasonic WV1410	$189
Color Splitter	$109
DCTV	**$449**
Display Enhancer A2000	**$289**
Flicker Fixer A2000	$435
Frame Buffer+Capture 1MB	$749
Frame Grabber - 256 Gray Scales	$636
Frame Grabber - Progressive	$539
HAM-E	$299
Video Toaster	**$1449**
VIP Video Interface	$109

MISC HARDWARE

A-Net A2000	$615
A-Net A500	$659
Cables	call
Case - Bomarc Tower	$286
CD-ROM External Drive	**$699**
CD-ROM A2000 Int. Drive	**$599**
Draw Tablet - Easyl 500	$359
Dual Serial Port Board	$219
Draw Tablet - Sketchmaster 12x12	$399
EtherNet A2065*	$290
Fast Fax	$599
Inks	call
Joysticks	call
Kwikstart A1000	$105
MouseTime - A1000 Clock	$33
Multiport Board CMI	$179
Multistart II	**$89**
Paper	call
PC Powerboard	**$499**
Power supply - AE A500 100W	$89
Rejuvenator A1000 (bare)	$350
Ribbons	call
ST506/RLL to SCSI Adaptor	$165
Serial Card - 7 ports	**$339**
Sheet feeder for GSX-140	**$144**
Surge Protector	**$118**
Serial Card - 7 ports	**$339**
Tape streamer 250MB backup	**$587**

NewTek's Video Toaster

The Video Toaster brings sophisticated digital video effects into the hands of every Amiga 2000 owner. The Toaster includes:

- ▲A Genlock unit
- ▲Two 24-bit video framebuffers
- ▲A 24-bit video digitizer
- ▲2MB of RAM
- ▲128 Digital Video Effects (DVE's)
- ▲A Chroma effects image processor
- ▲A Chroma key effects processor
- ▲A 35ns character generator
- ▲ToasterPaint, a 24-bit paint package
- ▲LightWave 3D, a 3D modeling, rendering and animation package

Briwall Price -- $1449!

Circle 132 on Reader Service card.

MIDI and SMPTE Compatibility

By Jamie Krutz

DANCING IS FUN, but timing is everything. MIDI and SMPTE time code are standards for music and video production that keep your multimedia production dancing in time.

WHY USE MIDI?

MIDI (Musical Instrument Digital Interface) is a scheme that allows computers to record musical performances and play them back through electronic musical instruments. One obvious use for MIDI is to drive external sound modules, such as stand-alone synthesizers and samplers. You can even then combine their output with the Amiga's four 8-bit internal voices for music and sound effects. A single MIDI sound module can support as many as 32 voices, with each voice being a different type of sound. Because the Amiga's custom sound chips keep sounds in chip RAM, using MIDI for sounds can also save chip RAM for graphics use.

Emu, Yamaha, Casio, Ensoniq, Roland, and Korg all build suitable sound modules, with and without keyboards, that sell from about $300 to $4000. I prefer sound modules that support velocity and aftertouch data for musical expressiveness and MIDI volume control, so that I can have the relative level of the sounds controlled from the computer. In addition, I recommend looking for multitimbral capabilities, which allow one sound module to provide many instruments at the same time, each listening to its own MIDI channel and each playing an individual line of music.

MIDI can do more than control music. With the proper MIDI-controlled equipment, you can use MIDI to run a lighting system and to control tape decks and other equipment, making your Amiga the control center of a complex multimedia production. You can also send MIDI into your Amiga from an external box to control some multimedia programs. You can trigger animations or still graphics from another computer, a MIDI keyboard, MIDI wind controller, MIDI violin, MIDI drum pad, MIDI tap shoes, or whatever.

To use MIDI on your Amiga, you need a MIDI interface box that plugs into your serial port. If your multimedia project needs more than 16 MIDI channels, or if you need a free serial port for a laser disc, tape machine control, or a time code reader, you can add additional serial ports via a card. The Serial Solution (Checkpoint Technologies, $199) supports MIDI correctly with no modifications. Bars & Pipes (Blue Ribbon SoundWorks, $299) or Music X (MicroIllusions, $299.95) are the first Amiga sequencers to support multiple MIDI ports.

HOW TO USE MIDI

There are two ways multimedia software supports MIDI: directly from within the program, and via ARexx interaction with another program that supports MIDI directly. For direct support, AmigaVision (Commodore, bundled with the Amiga or $149 separately) and DeluxeVideo III (Electronic Arts, $149.95) let you play MIDI modules using music saved as SMUS files—although AmigaVision supports only four MIDI channels. You need to create the SMUS files using a sequencing or notation program that supports the SMUS format.

Interactor (Very Vivid, $129) can send individual notes and other MIDI messages from the optional MIDI Expansion Module ($30). Showmaker (Gold Disk, $395) promises the ability to play standard MIDI files, which is what all multimedia programs should support. Most sequencing software on any computer will save and load standard MIDI files. The Director (Right Answers Group, $129.95) with its Director Toolkit ($39.95) can be triggered by MIDI note on/note off messages. PageFlipper Plus FX 2.0 (Mindware International, $299) promises two-way MIDI support.

For indirect MIDI support, Bars and Pipes can be controlled through ARexx, or it can control other programs. It can play MIDI sequences under ARexx control, and its optional Multimedia Kit ($59.95) includes a Bars & Pipes ARexx MIDI player that takes less of your Amiga's resources to run than does the full ►

PRESENTING THE MOST *DASHING* TRENDSETTER SINCE excellence!® 1.0



The first version of excellence! set the standards for power, features and ease of use in Amiga WYSIWYG (What You See Is What You Get) word processors. Now, excellence! v2.0 sets the standards again.

Whether you are a novice or novelist; student or professor; homemaker or executive, you'll enjoy the new, refined features an innovative pace-setter offers.

Excellence! has a personable and intuitive interface, allowing you to unlock its power in simple, understandable steps. Understandable also flourishes in the thorough reference manual that communicates with you in English, not some dialect of computerese.

What's new and better? First you'll notice the typing speed. It's fast! Excellence! zooms along as fast as you can type.* The Dictionary and Thesaurus are expanded with thousands of new words. Printing is extensively refined and features Mixed-Mode Printing to combine printer fonts with graphics. File and path names are longer allowing you to take advantage of hard drives. Excellence! now saves User Defined Defaults, so you start a document writing creatively, instead of mechanically changing margins. Now, that's better!

What's new? Virtual Memory Management permits document lengths limited only by disk space. The Thesaurus displays definitions to help you find the meaning you want. Leading values can be input directly so you can quickly change to double spacing. Alternate characters elegantly insert into text. You'll find easy-to-use Hard Drive Installation and Dictionary Maintenance utilities included for your convenience.

These are only a few of the many new features and improvements available in excellence! v2.0. So, we present to you a superb product, for your ever changing needs. From Micro-Systems Software, the leader in Amiga productivity applications.

Your favorite software just keeps getting better!

Technical Specifications

PRINTING
- **100% Color PostScript support**
- 4 types of printer output, special HP support
- **Internal printer font support**
- **Mail Merge**
- Preferences printer driver compatible
- **Mixed mode printing**
- Landscape printing

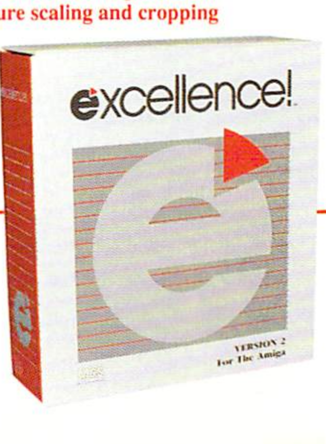
GRAPHICS
- **Mix pictures with text in paragraph**
- Graphics in headers, footers or footnotes
- **WYSIWYG** editing
- **Picture scaling and cropping**

ACCESSORIES
- **140 thousand word Dictionary** with legal, medical, technical, scientific, geographical, and biographical supplements
- **1.4 million word Thesaurus** (with definitions)
- **Spell-as-you-type**
- **Grammar and Style checker**
- Bullet proof **Hyphenation**
- **Glossary** with Macro key support
- **Macros** can be assigned to almost any key
- **Math**
- **Index and Tables of Content generation**

FORMATTING
- Mouse and keyboard support
- **Multiple newspaper-stylecolumns (1-4)**
- Left, Justified, Centered & Flush paragraph
- Left, Justified, Centered & Decimal tabs
- **Multiple headers, footers and footnotes** (odd and even headers and footers)
- Global font and style substitutions

- Page and Ruler settings stored in document
- **User defined Page Setup and Print defaults**
- Display current date and time in document
- Numbered footnotes

OTHER FEATURES
- **Typing speed exceeds 170 words per minute**
- IFF and ASCII file import
- **Free Technical Support for registered users**
- Clipboard support
- **Not copy protected**
- Undo typing
- **Hard drive install utility**
- Project icon support
- **Up to 250 fonts in a single document**
- Support for Interlaced windows
- **Virtual memory manager**
- 2, 4, or 8 color windows and color printing
- **Long path name support**
- Insert any standard character
- Low, medium & high resolution IFF support



Committed to excellence since 1978

*up to 175 words per minute

MSS
Micro-Systems Software

12798 Forest Hill Boulevard, Suite 202
West Palm Beach, Florida 33414
407-790-0770 FAX 407-790-1341

Dealers and Distributors Call 1-800-327-8724
See your local dealer for a demonstration.

Amiga is a registered trademark of Commodore Business Machines • PostScript is a registered trademark of Adobe Systems, Inc. • excellence! is a registered trademark of Micro-Systems Software, Inc.

Circle 95 on Reader Service card.

program. The Cue Card Tool lets you turn MIDI notes into ARexx messages and simulate keystrokes that allow MIDI to control multimedia programs. This opens a gateway to MIDI from ARexx programs like CanDo (INOVAtronics, $149.95) or Elan Performer 2.0 (Elan Design, $149).

I SYNC THEREFORE I AM

SMPTE stands for "Society of Motion Picture and Television Engineers," a standard-setting organization. SMPTE time code is the industry-standard way of labelling each consecutive frame of a video or film with a unique number showing hours, minutes, seconds, and frames. A second number, the "user bits" number, is commonly employed to show the tape number or date, but you may not need it.

Of the four types of time code (30 frames per second for NTSC video, 30 for drop frame, 25 for PAL video, and 24 for film), you'll probably use drop frame. Drop frame is the same as 30 fps SMPTE time code, except that it makes up for for differences between the frame rate of color NTSC video and real time by periodically skipping numbers, keeping the time-code numbers in line with real elapsed time—much as a leap year brings our calendar in line with cosmic reality.

SMPTE time code is useful in many situations. If you are using more than one computer in your presentation—one for music and one or more for graphics—and perhaps genlocking over video from a disk or tape machine, you can run one master SMPTE time-code track from a time-code generator or a tape-machine audio track and have everything stay exactly together. If you are using a taped soundtrack, put SMPTE on an audio track to sync everything.

If you are editing a video and need to lay an animation onto your tape at an exact location, your graphics program can know when to play the animation by listening to SMPTE. If you are creating music and sound effects for a video, you can lock your sequencer to a videotape, and then write music and create sound effects that will play back in perfect sync with the video. So far, no animation play-back program spits out time code as it plays, so you can't do the same trick directly for writing music for an animation. You might be able to use ARexx and MicroIllusion's TCRG 102 ($799.95) to play back an animation while playing back time code, perhaps from CanDo or AmigaVision.

SMPTE HARDWARE

To use SMPTE time code, you need a SMPTE reader/generator. There are three available for the Amiga. The Phan- ►

Manufacturers' Addresses

Blue Ribbon SoundWorks
1293 Briardale
Atlanta, GA 30306
404/377-1514

Checkpoint Technologies
PO Box 2035
Manassas, VA 22110
703/330-5353

Commodore
1200 Wilson Dr.
West Chester, PA 19380
215/431-9100

Dr. T's Music Software
100 Crescent Rd., Suite 1B
Needham, MA 02194
617/455-1454

Elan Design
PO Box 31725
San Francisco, CA 94131
415/359-7212

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

Future Video
28 Argonaut
Laguna Hills, CA 92656
714/770-4416

Gold Disk
5155 Spectrum Way, Unit 5
Mississauga, Ont., Canada L4W 5A1
800/GOLD-DSK
416/602-4000

INOVAtronics
8499 Greenville Ave., Suite 209B
Dallas, TX 75231
214/340-4991

MicroIllusions
PO Box 3475
Granada Hills, CA 91394
818/785-7345

Mindware International
110 Dunlop St. W., Box 22158
Barrie, Ont., Canada L4M 5R3
705/737-5998

PassPort Designs
625 Miramontes St., #103
Half Moon Bay, CA 94019
415/726-0280

RGB Video Creations
3944 Florida Blvd., Suite 102
Palm Beach Gardens, FL 33410
407/622-0138

Right Answers Group
Box 3699
Torrance, CA 90510
213/325-1311

Very Vivid
POB 127, Station B
Toronto, Ont., Canada M5T 2T3
416/686-7850

tom (Dr. T's, $299), a MIDI and SMPTE interface, is supported by Dr. T's KCS Level II sequencer and should be supported by Showmaker. Several other companies are evaluating it, as well. PassPort's MIDI Transport ($459), a more limited solution, is a MIDI and SMPTE interface that works only with the company's Master Tracks Pro ($395) sequencing software.

The TCRG102 time-code reader/generator comes with software to control reading and generating time code, plus window dubbing (using a genlock). It can grab time-code numbers on the fly and write them into any Amiga program, which is great for logging tapes, and it works with Photon Video: Edit Decision List Processor (MicroIllusions, $499.95) to automatically create edit-decision lists for video editing. The TCRG102 can be used with any ARexx program, and is the only unit with a sync input for proper alignment of time code with video, a necessity for video production.

MIDI time code (MTC) is SMPTE/EBU (European Broadcast Union) time changed into a form that can be sent over MIDI. To synchronize such sequencers as Music X and Bars & Pipes to SMPTE, you'll need a SMPTE-to-MTC converter.

How To Use SMPTE

Showmaker promises the ability to trigger directly from a SMPTE time-code number through the Phantom, or by using a SMPTE-to-MIDI time-code converter box. The TCRG102 can trigger multimedia programs that support ARexx, like CanDo and AmigaVision, and programmer Mike Berro is also working on a program that will trigger DeluxePaint III (Electronic Arts, $149.95) animations from the TCRG102.

Another way to go is to lock a MIDI sequencing program to an external SMPTE source and have the sequencer control your graphics program via ARexx. Bars & Pipes and the Cue Card Tool program from the Multimedia Kit are the first to support that capability.

For controlling video editing decks with SMPTE, AmiLink (RGB, $41.50 for serial cuts only) controls industrial and broadcast equipment, while EDL-1000 (FutureVideo, $295) controls consumer and low-end industrial equipment.

A Call to Standards

Right now all programs and all time-code boxes are not compatible. The ideal would be a standard system clock to which all multimedia software could sync—especially programs running together on the same machine—and which could be synced to any of the SMPTE readers. Selection of a SMPTE box, and of multiple serial-port assignments for MIDI and other uses, ought to be as easy as selecting a printer in Preferences. Commodore's upcoming CAMD internal MIDI Standards will help programs share real-time MIDI data, making multimedia uses easier and more powerful.

Even now, with the industry standards of SMPTE and MIDI, your Amiga can get up and dance with the best. ■

Jamie Krutz is a freelance writer, editor, composer, video producer/director/editor/photographer/animator and interactive developer. Write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Now $4.95 Stops The Clock On Over 100 GEnie Services.



Now enjoy unlimited non-prime time usage of over 100 popular GEnie Service features. For just $4.95 a month.* You get everything from electronic mail to exciting games and bulletin boards. Nobody else gives you so much for so little.

Plus enjoy access to software libraries, computer bulletin boards, multi-player games and more for just $6 per non-prime hour for all baud rates up to 2400. And with GEnie there's no sign-up fee.

JUST $4.95

Moneyback guarantee

Sign up now. If you're not satisfied after using GEnie for one month, we'll refund your $4.95.

Sign-up today.

Just follow these simple steps.

1. Set your communication software for half duplex (local echo), up to 2400 baud.
2. Dial toll free 1-800-638-8369. Upon connection, enter HHH
3. At the U#=prompt, enter XTX99499,GENIE then press RETURN.
4. Have a major credit card or your checking account number ready.

For more information in the U.S. or Canada, call 1-800-638-9636.

GE Information Services

*Applies only in U.S. Mon.-Fri., 6PM-8AM local time and all day Sat., Sun., and select holidays. Prime time hourly rate $18 up to 2400 baud. Some features subject to surcharge and may not be available outside U.S. Prices and products listed as of Oct. 1, 1990 subject to change. Telecommunication surcharges may apply. Guarantee limited to one per customer and applies only to first month of use.

GO AMIGO!™

THE WORLD'S LARGEST DISTRIBUTOR OF AMIGA™ PRODUCTS

Video Toaster Plus



- Time Base Correctors
- Panasonic Industrial Video
- Future Video Edit Controllers
- The Know-How to put it all together

Call for current availability

ProWrite 3.0

The new standard in wordprocessing

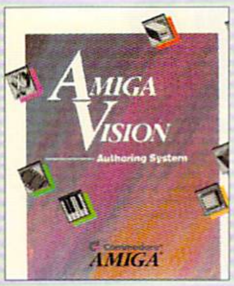
$89.00



New Horizons

AmigaVision

Join the Multimedia Revolution



$69.00*

After $25 rebate directly from Commodore•Offer good through 12/31/90

Free Send-Fax!

Buy a DataLink Modem and join the fax generation for **free!**



- **External $229.00**
- **Internal $177.00**

Applied Engineering

Limited Supply - While They Last

AudioMaster III

AEGIS a division of Oxxi, Inc.

- Higher Sampling Rate
- Easier Editing



- New Interface
- Compressed Data
- Supports all Samplers

$79.00

Supra Corporation

2400 Baud Modem with Cable

$107.00

Special Prices on WordSync's and 500XP Drives!

800-BE-AMIGA: THE AMIGA SOURCE

SOFTWARE SPOTLIGHT!

GRAPHICS

Autoscript 95
Award Maker Plus 34
Award Maker Sports Disk 20
B Graphics 126
Butcher 2.0 25
Comic Setter 69
Comic Setter Data Disks 25
Design 3D 69
Digi-Droid 74
Digi-Mate III 31
Digi-Paint 3.0 58
Digi-View Gold 4.0 124
Elan Performer 2.0 99
Font-Works 67
Frame Grabber SW 74
New! Image Link 124
● Imagine 239
Interchange 40
Interchange Object 15
InterFont 82
New! MegaPaint (24 Bit!) 164
Modeler 3D 59
New! Paintfun 28
PageRender 3D 108
Photon Paint II 99
New! Pixel 3D 92
Pixmate 54
Print Master Plus 33
RESEP 56
Scanlab Call
Sculpt 3D-XL 130
Sculpt-Animate 4D 399
Sculpt-Animate 4D Jr. Call
Turbo Silver Terrain Disk 22
Turbo Silver 109
Turbo Silver Conversion 15
Turbo Silver Video 30
Vid Gen 99
Videoscape 3D 2.0 122
New! VideoScape Promotion 56
● Wrap Session 59

VIDEO

Abacus Desktop Vid Book 18
Animagic 66
New! Animation Station 59
Broadcast Titler 199
Caligari Consumer 185
Credit Text Scroller 30
Digi-Works 3D 90
Director 45
Director Toolkit 28
Director Video Tutorial 31
New! Disney Animation Studio 114
Easy Titler 34
Fantavision 39
Lights Camera Action 58
Movie Setter 68
Movie Setter Data Disks 24
PageFlipper F/X 101
Photon Vid. Cel Animator 108
Photon Video EDLP Call
Photon Vid.Transporter 215
Pro Video Gold 199
Pro Video Gold Fonts (ea) 77
Pro Video Post 219
Scene Generator 29
● ShowMaker Call
Super Prompt 399
New! 3-D Text Animator 36
Title Page 129
TV Graphics 36
TV*Show 74
TV Text Professional 112
Video Effects 3D 142
Video Titler v1.1 99
Vista 74
Zoetrope 92

CAD

3D Professional 299
A Cad 146
New! Deck Builder's CAD 58
Draw 2000 149
Home Builder's Cad 139
Home Builder's Choice 55
Home Builder's Library 34
Home Builder's Print 79
IntroCAD 63
IntroCAD Plus 94
Professional Draw 2.0 134
Structured Clip Art 38
Ultra Design 229
X Shell Pro 139
X-Cad Designer 112
X-Cad Designer Pro 339

ART & FONTS

New! 600 Amiga Fonts 37
Airships 32
Aircraft Pics 36
Aloha Fonts (each) 15
New! Amiga SciFi 52
AmiZoo 34
Architectural Design 24
Bird Pics 25
China Pics 27
Clip Art Disks 1-8 (each) 15
Desktop Artist 23
E-Clips 74
EPS Clip Art 26
For Art's Sake 16
Future Design 24
● GEN Animations 37
Gold Disk Type:
New! Decorative 44
New! Designer 44
New! Publisher 44
New! Video 44
Heraldic Pics 27
Human Design 24
Kara Anim Fonts 1 32
Kara Anim Fonts 2 32
New! Kara Anim Fonts 3 34
Kara Headlines 1 or 2 53
New! Kara Star Fields 39

Maps Pics 44
Maps Pics USA 39
Masterpiece Fonts 149
Media Line Fonts 26
Microbot Design 24
Pic-Magic 65
PixelScript Fonts 1 54
PixelScript Fonts 2, 3 or 4 47
PixelScript Ornaments 47
PixelScript Sampler 47
Planets 29
Pro Font Library 54
Pro Page Outline Fonts 129
Quick Art 27
Sex Fonts 26
Starships 2050 30
Space Design 29
Story Book Capitals 36
Studio Fonts 32
Subheads 55
New! SuperClips (3 vols - each) 24
New! SuperSharp AnimFonts 46
● Vermont Seasons 29
New! Woodlands 29
● World Symbol Library 34
Zuma Fonts 25

BUSINESS

Advantage 129
BG Calc 106
Budgeteer 34
Critic's Choice 178
Desktop Budget 48
Easy Ledger 199
Gold Disk Office 184
Home Accounts 83
Investor's Advantage 79
Money Mentor Call
Nimbus 1.3 (New Version) 99
PHASAR 4.0 61
Project Master 130
Publisher's Choice 139
Real One 106
Securities Analyst 56
Service Industry
Accounting 274
Take Stock 34
Tax Break (1989) 57
New! Templicity 29
The Accountant 189
The Works! Platinum 199
New! Time Waste Management 56
New! Top Form II 62
WordPerfect Library 93

WORD PROCESSING AND DTP

New! Baby (Thesaurus) 22
CygnusEd 67
Excellence!2.0 (1MB) 159
Kind Words 2.0 74
Micro Text 25
Page Setter II 79
PageStream 129
PageStream Fonts (each) 27
PageStream Fonts (Mag. Images) 28
● PageStream Forms 28
Pen Pal 99
Pro Templates 38
Professional Page 1.3 Call
ProScript 33
ProText 139
ProWrite 3.0 89
Scannery 174
Scribble! Platinum 99
UltraForms for Pagestream 56
UltraForms for ProPage 56
WordPerfect 179

COMMUNICATION

A-Talk III (New Version) 70
Baud Bandit 35
BBS-PC 106
Online! Platinum 66
Skyline 99
Tele Tutor 21

GAMES

3D Pool 27
4th & Inches 30
New! A10 Tank Killer 36
After The War 36
Airborne Ranger 36
Alien Legion 36
All Dogs Go To Heaven 36
All Time Favorites 42
AMC 36
New! Amazing Spider Man 27
Amiga Karate 24
AMOS 70
Anarchy 29
Andromeda Mission 28
APB 31
Aquaventure 29
Archipelagos 29
Arena 15
Art Of Chess 24
Art of Go 42
Asterix 36
Astrarath 36
New! Atomic Robo Kid 34
Aunt Arctic Adventure 27
Auto Duel 28
New! Awesome 39
Baal 20
New! Back to the Future II 35
Bad Company 36
Bad Dudes 31
Balance of Power 31
Ballistix 22
Bandit Kings of Ancient China 44
New! Bar Games 32
Barbarian II 29
Barbarian 27
Bard's Tale II 43
Batman the Movie 31
Batman 34
Battle Chess 34
Battle Squadron 29
Battle Tech 34
Battleship 20
● Beam 23
Bermuda Project 31
Beyond Dark Castle 41
Bionic Commando 28
Black Cauldron 29
Black Jack Academy 29
Black Shadow 25
Black Tiger 36
New! Blades of Steel 32
Blitzkrieg/Ardennes 42
Blood Money 28
Blood Wych Data Disk 18
Blood Wych 36
Blue Angel 69 28
Blue Angels 36
Bobo 24
Boing the Game 31
Bomb Busters 23
Bombuzal 29
Breach 2 34
Breach Scenario 19
Breach 29
Bride of the Robot 31
Bridge 5.0 27
Bubble Ghost 29
Buffalo Bill 36
New! Calculation 25
California Games 29
Capone 28
Captain Fizz 21
Carrier Command 33
Casino Fever 26
Centerfold Squares 24
Chariots of Wrath 27
Charon 5 24
New! Checkmate 37
Chinese Karate 31
Chrono Quest 34
Circus Attractions 29
New! Classic Board Games 21
Clown-O-Mania 28
Code Name Iceman 42
Colonel's Bequest 43
Colorado 36
Colossus Chess 27
Combat Course 27
Conflict Europe 36
Corporate Raiders 31
New! Corporation 36
Cosmic Bouncer 21
Cosmic Pirate 37
Cosmo Ranger 36
Courtroom 36
Crackdown 36
Craps Academy 26
Crash Garrett 27
Crazy Cars 27
Crossbow: William Tell 31
Crossword Creator 35
Crystal Quest 36
Cyber Complex 25
Cycles 29
Daily Dbl. Horse Racing 24
Damocles 31
Danger Freak 24
Darius 36
Dark Century 32
DataStorm 27
Day of the Viper 36
Deep Space 21
Defenders of the Earth 36
Denaris 28
Detonator 28
Devonaire 34
New! DinoWars 29
Distant Armies 31
Dive Bomber 37
Double Dragon II 31
New! Double Dribble 32
Dr. Doom's Revenge 31
New! Dragon Flight 42
Dragon Spirit 31
New! Dragon Wars 36
Dragon's Lair II 47
Dragon's Lair 38
Dragonscape 31
Drakkhen 41
New! Duck Tails 32
Dungeon Master Editor 24
Dungeon Master Hint Disk 15
Dungeon Master 29
Dungeon Quest 34
Dynasty Wars 36
Dyter 07 29
Eliminator 28
New! Emerald Mine 1&2 Pak 37
Emperor of the Mines 32
European Scenery 20
Evil Garden 16
Exolon 28
Eye of Horus 29
New! F19 Stealth Fighter 42
F29 Retaliator 36
F40 Pursuit 31
Faery Tale 29
Falcon Scenery 20
Falcon 34
New! Falcon Mission Disk #2 21
Fast Break 30
Femme Fatale Data 17
Femme Fatale 28
Feud 18
Fiendish Freddy 35
Fighter Bomber 44
New! Fighter Bomber Mission Disk 35
Final Mission 25
Fire & Forget 27
Fire Brigade 33
New! First Contact 36
First Person Pinball 36
Fish 31
Flight Simulator 2 32
Flimbo's Quest 36
Fool's Errand 37
Formula One 21
Four In One 22
Fright Night 28
Frost Byte 21
New! Full Metal Planet 36
Galactic Invasion 19
Ganymed 22
Garfield's Winter Tale 36
Garfield 36
GeeBee Air Rally 28
Gemini Wing 29
Genius 29
Ghouls & Ghosts 29
New! Globulus 21
New! Gold of the Aztecs 39
Grand Prix Circuit 30
Grand Prix Master 34
Guerrilla War 31
Gunship 37
Hardball 2 36
New! Heart of the Dragon 36
Heat Wave 33
HellRaiser 35
Hero's Quest 42
Heroes of the Lance 29
High Steel 28
Hiway Patrol 32
New! Hockey League Simulator 31
Hole In One Courses 15
Hole In One 25
Hollywood Poker 25
Holmes 37
Hometown USA 29
HoneyMooners 29
New! Hot Rod 36
Hoyles Book of Games 28
Human Killing Machine 29
Hyperforce 35
I Ludicrous 25
Indiana Jones (Doom) 28
Infestation 29
Insanity Fight 29
International Soccer 28
Iron Trackers 31
New! Ishido 42
J Nicklaus Couse Disk 2 18
J Nicklaus Golf 37
New! J Nicklaus Unlimited 43
Japan Scenery 20
Jaws 29
Jetsons 35
Jet 29
Jigsaw Puzzlemania 25
Jinks 21
Karate Kid II 28
Kennedy Approach 30
Kid Gloves 36
New! Killing Game Show 33
King Arthur 37
King's Quest IV 41
Kingdoms of England 32
Klax 29
Knight Force 31
Kursk Campaign 43
Lancaster 31
Lancelot 29
New! Land Air & Sea 39
Last Duel 28
Last Inca 28
Last Ninja II 36
Leathernecks 28
Legend of Djel 36
Legend 29
New! Legend of Faerghail 29
New! Legend of Sir Fred 36
New! Legend of the Lost 36
Leisure Suit Larry III 44
Licence to Kill 29
Liesure Suit Larry II 34
Lombard Rally 29
Lost Dutchman Mine 35
New! M1 Tank Platoon 43
Magic Candle 39
Magic Johnson Hoops (1MB) 28
Major Motion 27
Malta Storm 43
Manhunter 2 - New York 35
Matrix Marauder 29
Mean 18 27
Menace 24
Metropolis 31
MicroLeague Wrestling 29
Midwinter 36
Millenium 2.2 37
Mind Roll 22
Mission ConBat 35
New! Monty Python 36
Moscow Campaign 43
MTB: Barbarossa 46
MTB: Central Germany 46
New! Murder 43
New! Neuromancer 32
New York Warriors 35
Night Hunter 29
NightDawn 25
Ninja Mission 18
New! Nitro 32
New! No Excuses 16
New! Nobunaga's Ambition 43
North & South 34
Obliterator 30
Off Shore Warrior 29
New! Olympus 32
Omega 36
Omni Play Basketball 37
Omni Play Horseracing 36
Operation Combat 29
Operation Overlord 56
New! Operation Spruance 36
Operation Wolf 28
PacLand 29
Persian Gulf Inferno 29
Personal Nightmare 29
Phantasm 24
Phaser Gun 45
Phobia 37
New! Photon Storm 31
Pictionary 36
New! Plague 29
Planet of Lust 29
Platoon 31
Pocket Rockets 29
Poco Man 31
Poker Solitaire 24
Police Quest II 42
Populous Worlds Disk 21
Power Struggle 29
New! Prince of Persia 29
Prison 28
Pro Football Simulator 27
Pyramax 31
Pursuit to Earth 29
Qix 27
Quartz 36
Quest For Time Birds 36
Questron II 35
Raider 24
Rambo III 27
Rampage 27
Realm of the Trolls 37
Realm of the Warlock 25
Red Heat 39
Red Storm Rising 43
Renegade 28
Rennaisance 27
Resolution 101 36
Revenge of Defender 27
Rick Dangerous 37
Road Raider 27
Robo-Cop 36
Rock Challenge 27
Rocket Ranger 33
Roger Rabbit 31
Roll Out 27
Roller Coaster Rumble 30
Romance of 3 Kingdoms 46
Rommel at El-Alameinr 43
Rommel at Gazala 43
New! Rotor 29
RVF Honda 31
Scary Mutants 27
Scenery Disk 7 or 11 18
Scenery Disk 9 20
New! Scenery Starter 44
Sea Haven Towers 25
Seconds Out Boxing 21
Sex Vixens From Space 29
Shadow of the Beast 29
New! Shadow of the Beast II 42
Sherman M-4 36
Shufflepuck Cafe 29
Side Arms 29
Side Show 31
Sidewinder 21
Sidmon 49
Silent Service 24
Silicon Dreams 25
Sim City Terrain Editor 17
SimCity 31
Sky Chase 28
Sky Fighter 19
SlipStream 17
Snake Pit 21
Snoopy 36
Soccer Match 29
Soldier 2000 36
Soldier of Light 36
Solitaire Royale 22
Sorcerer Lord 28
Space Ace 39
Space Cutter 28
Space Harrier 2 36
Space Harrier 36
Space Racer 21
Space Ranger 18
New! Space Rogue 36
Space School Simulator 24
Space Station 16
New! Spellbound 27
Spherical 29
Spin World 25
Spitting Image 29
Spy vs. Spy 2 18
Star Ray 31
Stellar Crusade 41
Stock Market Game 19
Street Fighter 29
Strider 29
New! Strike Aces 36
Strip Poker Data (each) 15
Strip Poker II 29
Stryx 23
Stunt Car Racer 34
Sub Battle 34
New! Super Game Pack 38
Super Scramble 29
New! Supremacy 36
Synapse 24
T.A.C.L. 74
Tank Attack 28
Targhan 36
Techno Cops 32
Teenage Mutant Ninja Turtles 31
Tele Epic 27
Telegames 26
Telewar II 27
Telewar 29
Tennis Cup 31
New! Terran Envoy 31
Test Drive II Data (each) 15
Test Drive II 30
Tetris 25
Theme Park Mystery 36
Third Courier 36
Three Stooges 31
Thud Ridge 34
New! Thunder Strike 36
Time & Magik 31
Titan 31
To the Rhine 36
Tom & Jerry 2 28
Tom & Jerry 25
New! Torvak 36
Transputer 24
New! Treasure Trap 29
Triad 36
Triple X 36
Trivia Pursuit 29
New! Turrican 29
Typhoon Thompson 29
Ultima III 29
Ultima IV 39
Under Sea Commando 34
Universe III 35
Vampire's Empire 17
● Vette Call
Vigilante 29
New! Viking Child 29
New! Vindex 24
Virus 21
Vortex 29
Vulcan 29
War In Middle Earth 35
Warhead 36
Warlock 28
Wayne Gretzky Hockey 34
New! Web of Terror 32
Welltris 29
Where Sleeping Gods Lie 36
White Death 39
New! Wild Streets 33
Wings of Fury 27
WindWalker 31
World Class Course Disk 15
World Class Leader Brd 29
World of Flight 109
World Snooker Billiards 22
World Trophy Soccer 28
Xenon II 39
Xenophobe 36
New! Yolanda 28
Zany Golf 19
Zero Gravity 21
Zoom 20

EDUCATION

Adv. of Sinbad 35
Aesop's Fable (Unicorn) 33
Aesop's Fable (Hilton) 19
New! Algebrain 66
All About America 42
New! American Idiomatic English 27
Animal Kingdom 35
Arabian Nights 35
At The Zoo 31
Barney Bear Call
Barney Bear 2 28
New! Barney Bear Meets Santa 22
Cardiac Arrest 49
Chicken Little 19
CLAS 99
ConSoundTration 30
Deluxe Help Call
Designasaurus 34
Dinosaurs Are Forever 29
Discovery Data Disks 15
Discovery Math 25
Discovery Spell 25
Distant Suns 51
Easy Grade 47
First Letters and Words 29
First Shapes 29
Fraction Action 33
Intellitype 29
Jigsaw 29
New! Katie's Farm 31
Kinderama 33
Learning Curve 55
Linkword Languages 24
Little Red Hen 19
Logic Master 36
Magical Myths 36
Match It 29
New! Math Blaster Plus 36
Math Wizard 35
Mathamation 59
New! McGee 29
Nutri Fax 43
Opposites Attract 31
Read & Rhyme 33
Read-A-Rama 33
Recipe Fax 28
Talking Storybook (each) 24
Three Bears 22
Three Little Pigs 19
Trip (w/Atlas) 35
Ugly Duckling 22
Where in Europe 35
Where In The USA 35
Where In The World 30
New! Where in Time 36
Word Master 35

DATABASE

DB Man V 199
DataRetrieve 59
DataRetrieve Prof. 189
Mail Shot Plus 73
Mailodex 35
Micro Base 25
Microfiche Filer Plus 115
Nag Plus 54
Superbase Personal II 99
Superbase Prof. 3 229
Who What Where When 67

PROGRAMMING

A/C Basic (v1.3) 134
A/C Fortran 199
Addison Wesley Manuals Call
Amiga Machine Lang. 24
ARexx 36
AssemPro 72
Aztec C-Dev (New Ver!) 199
Benchmark C Library 71
Benchmark IFF Library 71
Benchmark Modula-2 134
Benchmark Simplified 71
New! Blitz Basic 119
C++ 279
C 5.0 199
CAPE 68K 65
DevPac Amiga 67
DSM Disassembler 44
HiSoft Basic 115
InovaTools (New Version) 57
J-Forth 145
L Debug 76
Magellan (New Version) 129
Modula 2 179
Module 2 Debugger 88
Power Windows 2.5 63
Source Level Debugger 82
W-Shell 36

MUSIC

AMAS 135
New! Amiga Sings 12
Audio Master 2.0 63
Bars & Pipes 199
Bars & Pipes Music Box 45
Bars & Pipes Internals Sound Kit 45
Bars & Pipes Rules for Tools 45
Copyist Pro 149
Dr T. Patch Editors Call
Drum Studio 35
Dynamic Drums 59
Dynamic Studio 144
Fat Sounds 46
Fun Keys 28
KCS 177
New! KCS Level 2 Version 3.0 Call
M 149
MasterSound 54
Master Tracks Pro 259
MIDI Quest 179
MIDI Recording Studio 49
MidiMagic 98
Music Mouse 49
Music X 165
New! Performance 129
Pro Sound Designer 109
Quasar Sound 37
Sonix 49
Sound Oasis 72
Sound Trax 1 or 2 15
Soundquest Patch Editors 100
Studio Magic 75
Synthia 2 89
Synthia Professional 280
Texture 102
New! Trax 77
New! Wave 189

UTILITIES

AMAX 129
New! AMAX 2 149
Ami. Alignment 37
New! AmigaDOS HyperHelp 29
Amiga DOS Toolbox 40
Amiga Tricks & Tips 17
AmiKit 29
BAD 34
CAL (Calendar Maker)! 36
Can Do! 99
New! CanDo Pro Pak 1 27
CLImate 25
Color Commander 21
Cross DOS 4.0 29
Disk 2 Disk (New Version) 37
New! Disk Labeler 28
Disk Mechanic 60
DiskMaster 40
Dos 2 Dos 37
Doug's Library Disk 11
Doug's Library #2 19
Doug's Math Aquarium 59
Dunlap Utilities 55
Express Copy 31
EZ Backup 36
Fat Tracks 39
New! Family Tree 2 (New Ver) 49
FRED (Phone Dialer) 36
Home Inv Manager 27
Lottery Professional 31
Mac To Dos 92
New! Mastering CLI (New Ver) 31
New! Math Vision 119
New! Maverick Copier 31
MicroLawyer 42
Momentum Check 35
Norgen Geneology 71
Palette Printer 25
PixelScript 104
Project D (New Version) 37
Quarterback 45
New! Quarterback Tools 55
Raw Copy (Latest!) 37
New! Reaper 36
SuperBack 54
Tarot Master 21
Thinker 49
Total Control Diet 74
Virus Infection Protection 32
Virus Protection Toolkit 39
Vo Rec One 129
New! X Copy Professional 54

Our objective is to carry every product for the Amiga – and sell them at the best prices. Our policy is to be as competitive as possible on all product prices. If you find a lower price, please give us a call. It is no longer close to possible for us to list all the products we carry. If you don't see it listed, please call.

New! **Products are new and in stock.**

● **Products had not been released at press time.**

▼ **Products have been marked down in price.**

All other products are normally in stock (plus 100s more)!

WE ARE HOLIDAY HEADQUARTERS!

GVP Specials!

GREAT VALLEY PRODUCTS

New Products:

- Ricoh 50MB Removable $839.00
- 2MB RAM Board for A2000 $199.00
- FAAASTROMS (Upgrade for Speed) $39.00

Classics

- 68030, 28MHz w/ '882 + 4MB: $1,429.00
- 68030, 33MHz w/ '882 + 4MB: $1,629.00
- 68030, 50MHz w/ '882 + 4MB: $2,469.00

We will not be undersold on GVP products!

Series II Controllers Now In Stock

DataFlyer

Best Value SCSI Interface for the Amiga 2000!

EXPANSION SYSTEMS

- Auto Boot/Auto Install
- Optional 4/8MB Memory
- Compatible with removable media

DataFlyer (No Drive) $85.00

40MB $409.00 105MB $709.00



Curse of the Azure Bonds

Twice as deadly as Pool of Radiance!

$39.00



PowerMonger

From the creators of Populous

$36.00



Dungeon Master II: Chaos Strikes Back

In Time For The Holidays!

$29.00

ELECTRONIC ARTS

688 Attack Sub $35
Action Fighter 31
Afterburner 36
Air Combat USA 31
Alien Syndrome 31
Altered Beast 35
Aquanaut 29
Balance of Power 1990 .36
Battle Command 36
Battlehawks 1942 35
Billy The Kid 31
Blockout 29
Blood Relations 36
Blue Max 36
Brain Blaster 31
Buck Rogers 36
Budokan 29
Champions of Krynn 35
Colony 36
Crackdown 36
Cribbage King/Gin KIng .29
Curse of the Azure Bonds 35
Cyber Medix 31
Dark Castle 33
Days of Thunder 36
Death Bringer 29
Deluxe Music 63
Deluxe Paint III 99
Deluxe Photolab 99
Deluxe Print II 55
Deluxe Video III 99
Dinosaur Discovery Kit .29
DRAGON Force 35
Dragon Lord 36
Dragons of Flame 29
DragonStrike 35
Empire 35
Earl Weaver
  1988 Stats 15
  1989 Stats 15
  Basbeball 35
  Commisioner's Disk ... 15

F/16 Combat 35
F/A 18 Interceptor 35
F-29 Retaliator 36
Federation 35
Ferrari Formula 1 35
Flood 31
Fool's Errand 36
Golden Axe 36
Harley Davidson 36
Harpoon 43
Harpoon Data Sets 22
Hillsfar 35
Hound of Shadow 29
Hunt For Red October ... 22
Immortal 36
Imperium 29
Indiana Jones
  Action Game 29
  Graphic Adventure 35
Indianapolis 500 36
Iron Lord 29
It Came From The
  Desert 35
It Came II - Antheads ... 16
Keef The Thief 35
Kid Talk 29
Kristal 35
Life and Death 35
Loom 43
Loopz 29
Lords of the Rising Sun 35
Lost Patrol 36
Magic Fly 31
Maniac Mansion 33
Math Talk 29
Math Talk Fractions 29
Mavis Beacon 35
Might & Magic II 43
Myth 36
Night Breed 31
Night Shift 31
Nuclear War 35

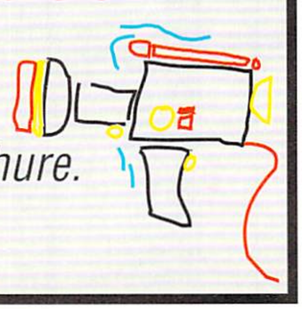
Pipe Dream 29
Pool Of Radiance 35
Populous 34
Powerdrome 35
Power Monger 35
Pro Tennis Tour 29
Puffy's Saga 23
Puzzle Gallery II 36
Puzzle Storybook 29
Rhyming Notebook 29
Rocket Ranger/Stooges 36
Sands of Fire 36
Second Front 35
Shinobi 36
Space Harrier 36
Speedball 29
Speller Bee 29
Starflight 35
Street Rod 31
Superbike Simulator 35
Sword of Aragon 29
Swords of Twilight 35
Their Finest Hour 43
Thunder Blade 36
Tunnels of Armageddon 29
Turbo Out Run 35
TV Sports Football 35
TV Sports Hoops 35
Unreal 35
Untouchables 31
Vegas Gambler 29
Waterloo 42
Wings 35
Yeager AFT 2.0 31
Zak McKracken 33

Titles in Green are New. Titles in Red have not been released but are expected in 1990. Titles in Black are available now!

Free T-Shirt with Buck Rogers!

We Know Video!

Call or write for our **free** VideoMaker brochure.



MORE GO AMIGO SPECIALS!

WE WILL NOT BE UNDERSOLD! BEST SERVICE AND BEST PRICE!

HARDWARE

ANAKIN
- Easyl A1000 ... 369
- Easyl A500 ... 359
- Easyl A2000 ... 399

APPLIED ENGINEERING
- 880K Floppy ... 123
- New! Ramworks 2MB ... 209
- New! High Density Floppy ... 199
- New! A500 Power Supply ... 95
- New! DataLink 2000 w/MNP5 & Fax ... 177
- New! Datalink Express w/MNP5 & Fax ... 229

All AE Products Now In Stock

APPLIED VISIONS
- FutureSound A500/2000 ... 95

ASDG
- New! JX-100 Scanner w/ SW ... 747
- Multi Port Serial Card ... Call
- New! Scanlab ... Call

CALIFORNIA ACCESS
- ▼ CA-880 3.5" Drive ... 104
- Bodega Bay ... Call

CITIZEN
- New! 24-Pin Color Printer ... Call

COMMODORE
- New! A2320 Video Adapter ... Call
- New! A2630 Accelerator ... Call
- Super 2MB Agnus ... 109

ALL CBM Products Except CPU's Are Now Available By Mail

DIGITAL CREATIONS
- New! DC-TV ... 394
- ▼ SuperGen ... 599
- ● SuperGen SC ... Call
- ▼ SuperGen 2000S ... 1,499

SuperGen Prices Good Through 12/31/90

DKB SOFTWARE
- New! Bat Disk (0K) ... 209
- New! MegaChip 2000 ... 254
- New! QwikStart ... Call

ECE
- MIDI for A500/A1000/A2000/A3000 ... 58

EXPANSION SYSTEMS
- BaseBoard 0K ... 119
- BaseBoard 512K ... 151
- BaseBoard 4MB ... 375
- New! BaseBoard XRAM Board w/512K ... 129
- New! DataFlyer SCSI ... 88

FUTURE VIDEO
- New! EDL 1000 Software ... 269
- New! Pro/Plus Edit Controller ... 639
- New! Pro/TC Edit Controller ... 1,179
- New! SMPTE Edit Control System ... 1,799

Frame Accurate Editing With Your Amiga - We Can Show You How!

GO AMIGO!
- Disk Head Cleaner ... 15
- 30 Disk Case ... 10
- ImageWriter II Cable ... Call
- Printer Cable ... 20
- Modem Cable ... 20
- Mouse Pad ... 10
- Sony Cables ... Call
- FlickerFixer Cables ... Call
- Custom Cables ... Call

GOLDEN HAWK TECHNOLOGY
- New! MIDI Gold 500 ... 65
- New! MIDI Gold Insider ... 72

GOLDEN IMAGE
- New! 400 DPI Hand Scanner ... 279
- Naksha Mouse ... 49

GRAVIS
- MouseStick ... 89
- SwitchStick ... 37
- The best joystick!

GREAT VALLEY PRODUCTS
- 68030 Accelerators for A2000:
  - ▼ 28MHz, '882, 4MB ... 1,439
  - ▼ 33MHz, '882, 4MB ... 1,629
  - ▼ 50MHz, '882, 4MB ... 2,469
  - 28MHz (by itself) ... 654
- Hard Drives to 200MB Available!
- A2000 Series IIHard Cards:
  - ▼ HC8+0/40Q ... 549
  - HC8+0/80Q ... 749
  - HC8+0/100Q ... 799
- Series II - No Ram Version ... 174
- New! A2000 2MB RAM Board ... 199
- A500 Series II:
  - New! HD8+0/20MB ... 549
  - New! HD8+0/52MB ... 749
  - New! HD8+0/105MB ... 999
- Streaming Tape ... Call
- Ricoh 50MB Removable ... 839
- FAAASTROMS ... 39
- AT ROMS ... 39
- 200MB Maxtor AT Drive ... 1,199

We have been the #1 GVP Dealer 3 Years in a Row!

Guaranteed Best Price on GVP!

HAITEX
- X-Specs 3D ... 97
- Call for product availability

HEWLETT-PACKARD
- Deskjet 500 ... Call
- Paintjet ... Call
- LaserJet Series III ... Call
- Deskjet printer driver available!

ICD INCORPORATED
- New! AdRAM 520 (0K) ... 119
- New! AdRAM 520 (4MB) ... 375
- AdRAM 560 (2MB) ... 259
- AdRAM 2080 ... 139
- Advantage HD Controller ... 139
- New! Flicker Free Video ... 389

INKWELL
- Light Pen ... 99

IVS
- Memory Boards ... Call
- Trump Card 500 ... Call
- Trump Card 2000 ... Call
- New! Trump Card Professional ... 219
- Sourcer Power Supply ... Call

MAXIMUM
- New! Yoke for Flight Simulator ... 78

MICROBOTICS
- Starboard II (A1000) 0K ... 239
- 8 Up (A2000) 0K ... Call
- Hard Frame for A2000:
  - No Drive ... 199
  - With 40MB Quantum ... 579
  - With 80MB Quantum ... 779
  - W/ 105MB Quantum ... 829

Get Ready For Hot New Products From Microbotics The Fall!

MICROWAY
- New! Denise Extender Board ... Call
- ▼ Flicker Fixer ... 374
- Genlock Upgrade ... 49
- PAL version available!

MICRODEAL
- MIDI Interface ... 31

MICROSPEED
- Amtrack Trackball ... Call

MIGRAPH
- New! Hand Scanner ... Call

MITSUBISHI
- DiamondScan Monitors ... Call
- Great for video!

NEC
- MultiSync Monitors ... Call

We have all the right cables!

NERIKI
- Neriki Desktop ... Call
- New! Neriki Desktop Y-C ... 1399
- New! Neriki Imagemaster ... Call

NEWTEK
- DigiView Gold ... 124
- Video Toaster ... Taking Orders!

Go Amigo is Toaster Headquarters! See Our Toaster Specials in This Ad!

PANASONIC
- New! WV1500 Camera ... Call
- WV1410 Camera/Lens ... 239
- Variable Iris Lens ... 79

DigiView Bundle - $379

PANASONIC INDUSTRIAL VIDEO
- New! AG-1960 ... 1,039
- New! AG-7400 ... 2,299
- New! AG-450 ... 1,699

We are authorized for all Panasonic Video Products!

PRACTICAL SOLUTIONS
- Cordless Mouse ... 99
- Mouse Master ... 31

PREFERRED TECHNOLOGIES
- New! Nexus Hard Disk Controller ... 239
- ● 24 Bit Frame Grabber ... 599

PROGRESSIVE PERIPHERALS
- Frame Grabber ... Call
- New! MiniGen ... 209
- Pro Gen Genlock ... 349

QUANTUM
- ProDrive 40S ... 369
- ProDrive 80S ... 549
- ProDrive 105S ... 599

RD & L PRODUCTIONS
- New! A Pro Draw II ... In Stock!

SAFESKIN
- Clear Keyboard Covers ... 19
- Specify Amiga model - A3000 in stock

SHARP
- New! JX-100 Scanner w/SW ... 747
- JX-300 Scanner ... Call
- JX-450 Scanner ... Call

SONY
- 1302 MultiScan ... Call

SPIRIT TECHNOLOGY
- 0K Spirit Board / A1000 ... Call
- 0K Spirit Board / A500 ... Call
- 1.5MB Spirit Board for A500 ... 429

STAR MICRONICS
- ▼ NX1000 Rainbow ... 239
- NX1000 Black ... 190
- Ribbons available!

SUNRIZE INDUSTRIES
- Perfect Sound ... 69
- Color Splitter ... Call

SURFSIDE
- ▼ Master 3A 3.5" ... 105

SUPRA
- ▼ 2400 Modem ... 107
- 2400zi Internal (A2000) ... 125
- A2000 0K RAM Board ... 119
- ▼ A2000 2MB RAM Board ... 199
- A2000 Wordsync Controller:
  - No Drive ... 129
  - With 40MB Quantum ... 459
  - With 48MB Seagate ... 399
  - With 80MB Quantum ... 649
  - W/ 105MB Quantum ... 699
  - External 44MB Removable (incl. controller) ... 1,039
- Hard Drives for A1000:
  - 40MB ... 789
- SCSI Interface (A1000) ... 209
- Hard Drives for A500:
  - New! XP20 with 512K ... 629
  - New! XP40 with 512K ... 729
  - New! XP20 with 2MB ... 779
  - New! XP40 with 2MB ... 879
  - 44MB Removable ... 1,169
- 2MB RAM for A500 (Old Style) ... 275
- 512K RAM Exp. (A500) ... 68

We will not be undersold on Supra!

WICO
- Trackball ... 39

VID TECH
- Scanlock ... 799
- Scanlock Power ... 69
- New! VideoMaster ... Call

VISUAL AURALS
- Mindlight 7 ... 178

We stand behind the hardware we sell with full warranties and intelligent, informed support. We all own and use Amigas, and we can help make sure you get the right equipment.

- New! **Products are new and in stock.**
- ● **Products had not been released at press time.**
- ▼ **Products have been marked down in price.**

Attention Shoppers!

Don't forget, Go Amigo will meet or beat any legitimate deal on any Amiga product. You can have it all:



- **Best** Products
- **Best** Prices.
- **Best** Service... **and**
- **Best** Value!

Example: Commodore A2630 w/4MB: $1,399.00

DigiView 4.0

With Dynamic Hi-Res!

$124.00

DigiPaint 3

The Ultimate Paint Program!

$58.00



ORDERS ONLY: **800-BE-AMIGA**™ (800-232-6442)

CUSTOMER SERVICE: **415-364-9714**

FACSIMILE (FAX): **415-365-2073**

VISA MasterCard

Send Mail Orders to: **GO AMIGO** *2682D Middlefield Rd, Redwood City, CA 94063*
(Money Order, Cashier's Check, or Qualified P.O. only. CA residents add sales tax.)

SHIPPING INFO: Software Shipping rates are $3.00 per item using UPS Ground service (max. $9.00) or $4.50 per item using UPS 2nd Day Air Service (max $13.50). Next Day shipping via Airborne Express is available at a very low rate - often less expensive than UPS 2nd Day. Please call for complete details. Alaska, Hawaii, APO, Mail, foreign shipping extra. Call for hardware rates and other shipping info. **RETURN & REFUND POLICY:** All returns must have an RMA#. Call Customer Service to request one. Defective merchandise under warranty will be repaired or replaced. Some returns may be subject to a restocking fee. Returned product must be returned postage prepaid with all original packaging. Exchanges for same product only. **OTHER POLICIES:** We don't charge your card until the product ships. Purchase order customers must have credit application on file. No surcharge for VISA and MasterCard. When ordering with credit card, **please** include expiration date and name of bank! Solve the MongerMystery-Win a Prize!

Amiga is a trademark of Commodore-Amiga. Go Amigo is in no way associated with Amiga. Delivery subject to product availability • Prices subject to change • **Circle 26 on Reader Service Card.**

THE GAME PRESERVE

PRINCE OF PERSIA

By John Ryan

SET AGAINST THE backdrop of an Arabian castle, Prince of Persia is a superb graphic and sound feast. Too bad its controls are only half-baked.

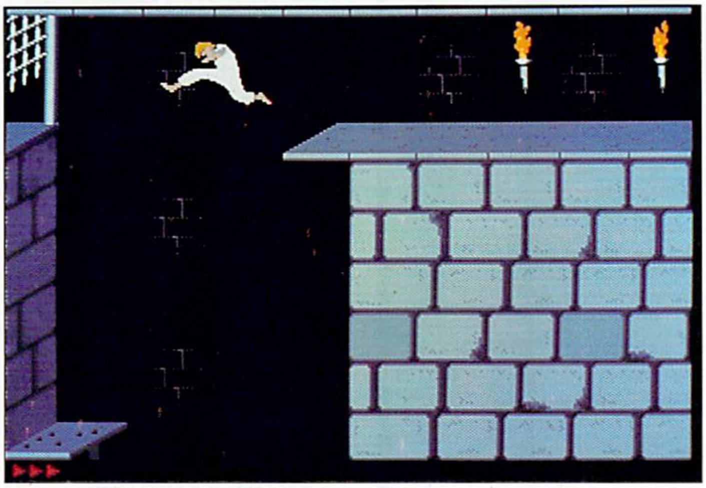
Prince of Persia aptly harnesses the excitement and action of the old, black-and-white swashbuckling movies. Within the hour, you, as the prince, must rescue the princess from a locked tower and impending forced marriage. The author studied hours of old film footage to pattern the animation as realistically as possible, and it shows. The running, leaping, and fighting is fluid and realistic. As you climb your way up through the levels to your waiting princess, you must contend with spike traps, false floors, sword-wielding guards, and tricky puzzles.

You'll need dexterity, good hand-eye coordination, and problem-solving skills. Throughout the castle, watch for the spring-loaded floor stones; they can lift gates and doors in the dungeon, fall away completely and toss you to your death, or unleash such nasty surprises as deadly spikes. The trick here is experimentation, quick thinking, and timing. You will succeed only after you have learned how to effectively duck, climb, and jump.

Which leads me to my complaint about Prince of Persia: The joystick operation is perhaps the poorest of any action game I have played. To jump, you must press the joystick diagonally, not the most natural position. Needless to say, my character died a thousand untimely deaths until I finally became used to the unwieldy operation. Likewise, you should expect to lose more than a few lives in sword play, for if you accidentally press the joystick down, your man will promptly put his sword away, and the attacking guard shows no mercy.

As much as I dislike the controls, I love the graphics, animation, and sound. The pathways, stone towers, gates, and other accoutrements are richly rendered in a quasi-three-dimensional perspective. And the first time you climb a tall tower or see the stone collapse beneath your feet, your heart is sure to beat just a little faster. You may even let out a small yelp when a skeleton unexpectedly pops up and engages you in a wild sword fight (*à la* the old Sinbad movies).

The digitized sound effects are equally impressive, ranging from screams (as you fall from a ledge), to running footsteps, crashing stones, lifting gates, and more. In fact, if it were not for the poor joystick control, I'd nominate Prince of Persia as the action game of the year. ($39.95, Broderbund Software Inc., 17 Paul Dr., San Rafael, CA 94903, 800/527-6263, 415/492-3200. Joystick required.) ►



Leap for your life.

Crib Notes

By Peter Olafson

SHOULD OLD ACQUAINTANCE be forgot, you probably just need to restore your last-saved game. I'm feeling as contrite as a 25th-level fighter who beats up on an innocent character. So, here are my New Year's resolutions . . . for game resolutions.

• *I will print no hint before its time.* Last year, I heard from SSI that *Pool of Radiance* (Strategic Simulations Inc., $49.95) was planned for April, so I tore through an early version to have hints ready for that issue. Problem was, Pool of Radiance didn't come out until September.

Ahem, now that it *is* out, some more advice: The city clerk, early on, will send you off to the graveyard. Clear the tombstone-filled area around the entry, but put the rest off and do it in increments. It is far more difficult an assignment than anything you have tackled so far.

• *I will try to keep my promises.* I meant to get around to a walkthrough of the second castle in *Drakkhen* (Draconian, $59.95), but something always seemed to come up—like getting killed in the first castle. At last, here it is:

We'll pick things up at the "bat room." The bats are pretty wimpy, but there's some kind of life-drainer at work here. Keep your party closely packed before you enter the room, and don't go into combat mode. You can't afford the delay. You can take care of the bats in the next room. (And look around for reading matter in the next couple of rooms.)

Here's trouble: It's the first fireplace room, and you're asked to look at the ►







THIS GAME IS RATED X.

Xciting adventure! Xceptional graphics! Xcellent sound!

Konami® and Image Works™ bring the xhilarating big screen xperience of Back to the Future II™ to your home computer—and the entire family.

As Marty McFly, you must trek through time to retrieve the sports almanac or else your yet-to-be youngsters will be doomed to a frightful future. Each of the five time warped levels recreates key scenes from the hit movie in authentic detail. You'll have to keep your son out of the slammer. Race through dangerous Hill Valley and recover your DeLorean. And that's just the beginning. We've packed your mission with unrelenting oafs and obstacles including Biff, Griff and their gang of muscle-bound melon heads. But don't rely on your martial arts moves alone. Because during the frenzied flight through time, strategy comes into play as you try to rescue Jennifer and attempt to solve the baffling high school dance puzzle.

So grab a tub of hot buttered popcorn and take the fun of the film to its xtreme. Get Back to the Future II today!

Free inside every package! Genuine Back to the Future II sports cap like the one Marty wore in the movie!

Available on Amiga®, MS DOS and compatibles, Tandy® and Commodore® 64/128.

Supports Ad Lib,™ Roland™ and Tandy® Sound Boards.



KONAMI®

IMAGE WORKS™

Circle 25 on Reader Service card.

MIDWINTER

By Peter Olafson

A 3-D, ROLE-PLAYING wargame, Midwinter has an easy sweep, deceptive depth, and a vastness that can only have been drawn from real life. You are Captain John Stark, and, as leader of the FVPF on the vast, frozen Midwinter Isle, you suddenly find yourself the brains behind a guerrilla campaign against the invading General Masters. A new Ice Age was set off by a giant meteor's collision with Earth, and Midwinter has become extremely valuable real estate.

You play much of the game in the first-person mode in a light-sourced, three-dimensional environment. Ski down a hillside at 45 mph with snow hissing in your ears. (Watch those missiles.) Find a garage and fire up a snow buggy. (Watch that slope. Snow buggies can tip over, y'know.) Ride a gondola lift up the mountain. At the mountaintop, ride a hang flyer down to your next stop. Watch those downdrafts. Midwinter is one of a handful of computer games that are absolutely involving; you *feel* like a character in it.

As a place to explore, Midwinter is great fun. As a full-fledged game, it's nothing short of staggering. 32 people with 14 qualities and skills must be woven together to perform sabotage and sniper duty, to cross the ice to persuade others to join in the fun, and finally to raid the enemy stronghold. Make sure that you stay sensitive to the web of interpersonal relationships and plan carefully; the gang aren't all friends.

The icon-based menu screens make planning easy. Even when you're in the middle of nowhere, you'll know where you are. Of course, enemy ground forces and bombers are having at you almost from the word go, so don't stand around with ice on your face while you decide. (Thankfully, there's an option to turn off enemy troops while you're learning the game.)

Now, Midwinter's heart may be warm as toast, but its extremities are somewhat chilly. You can't install it on your hard disk or make a backup. For copy protection, it uses the new and intimidating practice of identifying individuals among a throng of mostly similar faces. Finally, the manual is poorly organized and contains at the outset far too much scientific or pseudo-scientific rationalization of the scenario.

Do yourself a favor, however, and take the time to maneuver around these obstructions. Midwinter is a genuine Amiga classic. You won't be sorry. ($39.95, Microprose, 180 Lakefront Dr., Hunt Valley, MD 21030, 301/771-1151. No special requirements.)

BRAINBLASTER ACTION PAK

By Rob Lawrence

WHEN I SEE something labeled "two in one," I'm immediately suspicious of a rip-off. The two-in-one Brainblaster Action Pak, however, gave me a surprise: double my money's worth! Brainblaster is composed of two complete games: Bombuzal, a perplexing series of arcade-type puzzles on a single disk, and Xenon 2, a fantastic, double-disk space blastfest. Both were designed with brilliance, and either is good enough to be sold alone.

Bombuzal puts you in a race against the clock to detonate a multitude of bombs on increasingly difficult levels of tiles. The creature you control resembles Mr. Potato Head, and is just about as agile. Once you activate a bomb, it explodes when you step to the next tile and detonates any other bombs nearby. Because bigger bombs have bigger bangs, you must be careful not to get caught within the blast radius.

Aside from bombs, you must also evade or destroy mines and a few odd-looking droids. Some of the floor tiles are icy, causing you to spin uncontrollably, and others dissolve when you move off them, so you must constantly think ahead. With 120 levels of cartoon-quality graphics (2-D or 3-D view), Bombuzal will prove a challenge to even the most quick-witted.

Xenon 2 can be summed up in three words: fast, furious, fabulous! It's a good old shoot-'em-up stretched to the limit and cram-packed with action. As a Galaxian Megablaster pilot, you must find and destroy five time bombs ►

ashes. Would you walk out in the middle of a busy street if I told you to? You'll trigger a string of very aggressive fire elementals. Steer clear. For maximum control, bring your party through one member at a time and stay out of combat mode.

The second fireplace, however, does something quite different and quite useful (though you won't know it straight off). Listen for a clue, a knock sound. If you're finding only dead ends afterward, you didn't trigger it.

How nice! A fountain. . .in a dark basement room. Before you go and examine it too closely, be sure *everybody* has a torch (or a light spell).

You teleport into a room of water elementals. Suggestion: Keep your cool, and stay out of combat mode as long as you can, as the elementals may not attack at all. Go straight for the armor and weapons on the wall and then get out. Don't miss the prisoner in the next room.

You're going to have to fight the elementals eventually, but it's better to have your party intact when you do. The room off the bottom of the screen isn't completely safe, but it's close. You have one more room to tackle. I suggest a solo visit. Just remember that lightning is bad for you, and that it's better to have your opponent come to you.

• *I will try to get hints out faster.* Debbie Dempsey of Kent, Washington, wrote me back in June for help going underground in *The Jetsons* (MicroIllusions, $39.95), and only now have I found her an answer. You have the right idea about the use of the crystal key, Deb, but you have to use it on the five panels in a certain order. Not a nice puzzle, and you have to do it again later, too. The first three panels for this door are yellow, purple, and green. That information should make it a bit easier.

Patrick Atkinson of Paso Robles, California, is stuck in the mall in the same game and trying to figure out how to buy the mini submarine on George's salary. As I recall, it's a red herring. Do visit Travel Concepts, however, for a couple of useful items. You can pick up a dress and tux at the mall, too. It won't win you the ►

If you ever wondered just how smart you were when you bought your Amiga®, get AmigaVision™.



Remember your original reasons for getting an Amiga? Of course you do. Silly question.

Well, fast-forward now to April 24th, 1990, the day Commodore introduced AmigaVision.

AmigaVision is an authoring system for a mere $149 that allows the Amiga to live up to its full potential.

The easy-to-learn, easy-to use icons you see up on the screen and on this page call up music, animation, text, video—in whatever order or even simultaneously—and create, well, any type of presentation or courseware.

Also, AmigaVision takes full advantage of ARexx, your Amiga's file format standards and its multitasking capabilities.

As you might imagine, you don't have to be a programmer to turn your abstract ideas into reality. All you have to be is you.

Can it extend the use of application software you already own? Is there multitasking interaction with other programs? Is it dBase III™ database compatible? Yes…yes…yes, to all these queries.

For business people, it can create presentations that persuade. For people in education and training, it can help create interactive instructional programs. For anyone, anywhere, it can liberate the way they communicate, whether they are delivering information or entertainment.

Call 1-800-66-AMIGA soon to find the location of your closest Amiga dealer. For you, it's another confirmation of what you knew before most people: namely how smart Amiga is and how shrewd its owners were when they bought one.

Amiga®. The computer for the creative mind.™

Commodore®

Circle 313 on Reader Service card.

deployed on a planet by the evil Xenites. There are five huge, twin-segment levels (each with a massive guardian creature at the end) to complete before the finale. Countless types of crazed life forms and machines see to it that you get a good fight along the way. Dead creatures often leave behind cash bubbles that you can collect to purchase extra shield power and instruments of destruction. The more dough you have, the more awesome your arsenal of firepower can be.

The graphics, animation, and sound effects are a definite 10, and the outstanding bass sound track, composed from tidbits of digitized rap, jams along with the game. The tri-layered, vertically scrolling background gives it depth,



Puzzle and blast your way to safety.

and the shaded details are remarkable. Aside from a high-score table you can't save, I have no complaints.

I'm surprised that this duo wasn't labeled with an addiction warning; from the moment I booted them up, I was hooked. Brainblaster Action Pak is a steal! ($39.95, Cinemaware, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. Joystick required.)

LOOM

By Graham Kinsey

IN LOOM, YOU are Bobbin, an orphaned child of a reclusive guild clan named the Weavers. The Weavers use cloth and music to weave magic that is unrivaled. With no substantial help, you must unite the realm's warring craft guilds against the growing forces of chaos—and defeat Lord Chaos yourself!

How Bobbin and the Weavers cast spells is the most interesting part of Loom. To cast a spell, you must sing four musical notes that cause a Weavers' staff to create powerful magic. Because Bobbin is an outcast of the clan, it is forbidden to teach him the notes for the various spells, and he must learn them on his own.

Loom is totally mouse-controlled: Simply click on an object or person to find out more information. While people spew forth lots of details while telling nice stories (over which you have no control), I found most of it to be useless drivel.

On a much sadder note, presentation is quite inadequate. The graphics are very poor, with dithering that sticks out like a billboard. The animation is bad, even on a 68030-based Amiga. The sound effects are equally mediocre, although I did like the prelude story that comes on an audio cassette (a CD version is available for $10).

To top it off, I was able to finish the game in merely eight hours; only novices need apply. ($59.95, Lucasfilm, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. 415/571-7171. No special requirements.)

DAMOCLES

By Peter Olafson

CONSIDERING HOW MANY adventures are available for the Amiga, I'm amazed so few have real atmosphere. Too many games give the overriding sense of. . .well, of sitting at your Amiga playing a computer game. Standing out from the rest is Damocles, a ►

game, but your family will approve.

• *I will play* Dungeon Master *(FTL, $39.95) through again.* Lately, requests for help in DM (and Interplay's Future Wars) are outpacing everything else. For instance, Timothy Bell, of Round Rock, Texas, is stuck at an obstinate door on Level 8.

For starters, Tim, leave the switch alone. It's a trick: It dumps a chest (which you can get much more easily by other means) into a pit. Instead, go right; you'll eventually come upon some stairs leading up. Use them, and then use a trap door to come back down. Now you're on the other side of the door, and you can open it *and* take the chest.

For Jef Dinsmore of Punxsutawney, Pennsylvania: The three rooms after the "riddle room" on Level 5 aren't too tough. In the first, there's a switch controlling a teleporter. Teleport an item to shut the trap; then open the door and throw the switch again to get your property back. In the second and third, kill off the monsters, check the walls for switches and hit them in the right order to open a secret door concealing the keys. As for your other question, Jef, I'll tackle it next time.

• Two last things: I have a new address: 12 W. 104th St., Apt. 3E, New York, NY 10025. (You can still reach me by E-mail on GEnie as P.Olafson and on P/Link as Peteroo.) If you need your game hint fast, like yesterday, send a self-addressed stamped envelope with your letter.

Next time, hints on everything under the sun. And perhaps on a few things that have never seen the sun. (Ghoulish laughter recedes.)

COMPANIES MENTIONED:

Draconian, distributed by Data East, 1850 Little Orchard St., San Jose, CA 95125, 408/286-7074.

FTL Games, 6160 Lusk Blvd., C-206, San Diego, CA 92121, 619/453-5711

MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344, 800/255-5217, 818/360-3715.

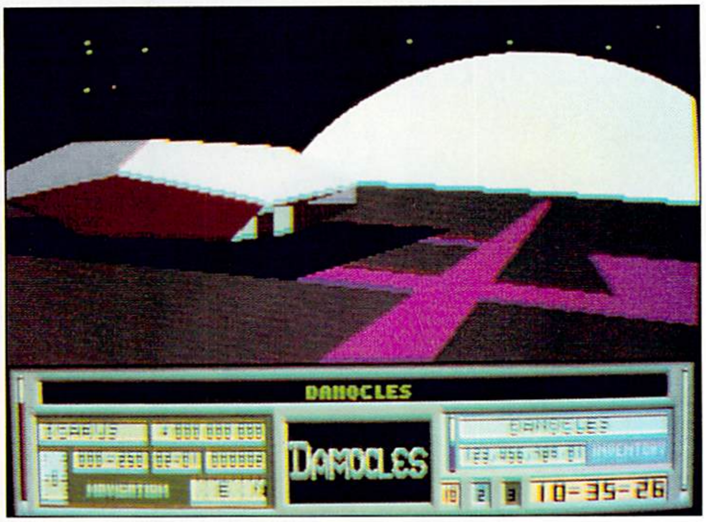
Strategic Simulations, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. ■


ThunderStrike
ThunderStrike . . . the game of the future is now.
In the year 2238 TV networks and defense industries control the earth. Whoever has the highest ratings rules the world. The ultimate TV phenomenon is the military olympics — where gladiators compete and attack enemy vessels in deadly low flying combat.
Choose to pilot a variety of sleek fighters and zoom along a tracklock or hug the undulating contours of the ground in a futuristic world. Your exploits are tracked by a camera following right on your craft's tail — catching all the action in spectacular 3-D vector graphics, the fastest ever seen!
LIVE® STUDIOS INC.
Redefining fun . . . and Games.
• Soar in a future world with sleek, smooth state-of-the-art graphics and fast, fast action!
• Strap yourself into a variety of swift Defender Class fighters.
• Breathtaking contoured landscapes in the latest, most advanced 3-D vector graphics design.
• Ten new levels in each of five different olympic arenas tests your reflexes and skills.
• You must achieve a high TV rating in the military olympics with hit rates, great defense and exciting play!
Available on IBM and Compatibles, AMIGA and ATARI ST.
AdLib SOUND
IBM PC VGA SCREEN SHOTS
See your retailer or call (714) 661-8337 for Visa / MC orders or mail check/money order for $39.95 plus $3.00 handling ($10.00 outside U.S.) to: LIVE Studios, Inc., 30151 Branding Iron Road, San Juan Capistrano, CA 92675. Specify IBM, AMIGA or ATARI ST. Allow 2-3 weeks for delivery. ThunderStrike is published by LIVE Studios, Inc. under license from Logotron Entertainment Ltd., London. © 1990 Logotron Entertainment Ltd. Millennium is a trademark of Logotron Entertainment Ltd. . . All rights reserved.

grand-scale, three-dimensional adventure that's about the loneliest game in town. It has a quietly creepy atmosphere, which is fully appropriate to the plot.

In Paul Woakes' followup to his earlier Mercenary: Escape From Targ, the inhabitants of Eris have evacuated to make room for a comet, and you—still a mercenary—are enlisted to stop it. The bounty too long. Damocles is looming ever closer. Keep your exploring quite pointed if you mean to take care of the comet. Despite the occasional house-to-house search, the game doesn't lead you astray. Its puzzles and surprises (both pleasant and unpleasant) are well laid out.

A couple of caveats. The sound is only so-so; there isn't much of it, as you'd expect,



Can you save the planet from the approaching comet?

for success is healthy, and there's a premium for a solution that isn't destructive. (Hear, hear!)

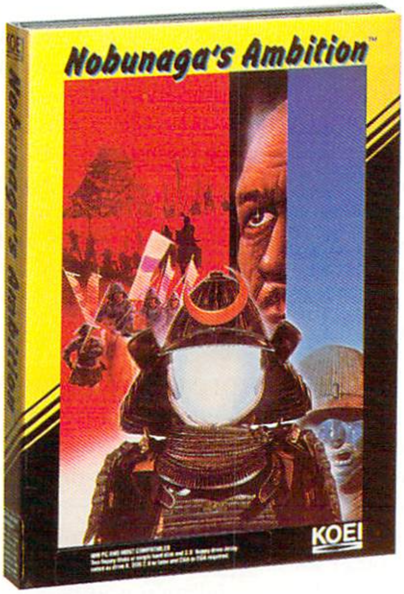
Mercenary was large in scope but quite basic in appearance. The Damocles universe is even larger (nine planets and 19 moons) and features solid-fill graphics, sizable cities, and more detail than you can shake a joystick at. You could furnish a mansion with the furniture you'll find in Damocles.

Even better, all this good stuff loads into memory at once, even on a 512K machine, so the only disk access necessary is for saving and restoring. Commands, only a key-press away, are easy to remember, and the planes and spaceships with their basic controls are a joy to fly.

Don't gawk at the scenery but my television static sounds better than that spaceship engine. The more than two-minute intro is fun to watch the first couple of times, but it repeats every time you boot up. I wish I could go straight to the game, instead. The frame rate is good, but still a notch or two below the seamless movement of which the Amiga is capable. The 3-D system is delightful for its depth and consistency, but it occasionally reveals small objects beside buildings before the buildings themselves appear.

All in all, I think we'll survive, even if Eris doesn't. Like its namesake, Damocles shines. ($44.95, Novagen, distributed in the US by Bethesda Softworks, 15235 Shady Grove Rd., Suite 100, Rockville, MD 20850, 301/926-8300. Joystick required.) ■

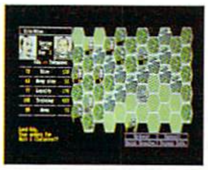
The Destiny of a Nation is in Your Hands



Nobunaga's Ambition is now available for Amiga, PC and NES



Main Screen



Battlefield Map



Ending Screen

Sixteenth Century Japan was controlled by feudal lords. Each ruled a single fief, each wanted to become Shogun and rule the entire nation. One man, Oda Nobunaga, came close but failed. He paid the penalty for failure, death.

Take Nobunaga's place and unite Japan. On the battlefield, attack and retreat. Use the terrain to your best advantage. During times of peace, build your economy, keep your peasants happy and your soldiers loyal or risk revolt. Negotiate with other lords, or perhaps you would rather just send Ninja. Seize all the advantages you can. You'll need them!

FEATURES:

- *Fully multi-tasking*
- *Two Scenarios*
- *Not copy protected*
- *Detailed historical notes, manual and poster included*
- *Complete mouse support*
- *Five levels of difficulty*
- *One to Eight players*
- *Easy to use reference card included*



Bandit Kings of Ancient China - The evil minister Gao Qiu has usurped the command from the throne. The righteous followers of the emperor have been exiled as outlaws. Join these heroic rebels in your mission to overthrow a wicked empire, and restore the might to the throne. *Available for NES, PC and Amiga.*



Genghis Khan - Become the greatest warrior the world has known. Through battles and allegiances, forge the mighty Mongol Horde. With armies at your command, the empires of the world are tempting targets. Fight bravely to achieve the ultimate goal of world conquest. *Available for NES, PC and Amiga.*



Romance of the Three Kingdoms - As a Warlord of the 2nd century China, you must restore a shattered Empire. Gather the bravest warriors of the land to build up your armies. Use strength and strategy to destroy your enemies and claim the power to govern all of China. *Available for NES, PC and Amiga.*

KOEI's "HOW WELL DO YOU KNOW OUR HISTORY?" Sweepstakes

Questions:

1) Genghis Khan's greatest claim to fame was?
(a) a quick temper (b) the hit single "I feel for you!" (c) a bad smell (d) carving out an empire stretching from China to Europe in the 12th century

2) What famous gang defeated the evil minister Gao Qiu and restored peace to the Song Empire?
(a) Hole in the Wall Gang (b) Bandit Kings of Ancient China (c) Gang of Four

3) What was the epic describing the power struggle at the end of China's second Han Dynasty called?
(a) Romance of the Three Kingdoms (b) I Ching (c) Godzilla

4) Who terrorized and almost succeeded in unifying Japan in the 16th Century?
(a) Cowabunga (b) Nobunaga Oda (c) Godzilla

5) What type of game does KOEI make?
(a) simulation (b) historical (c) educational (d) entertaining (e) all of the above (f) none of the above

6) "KOEI, We __________ the past, you make the __________ !"
(Fill in the blanks)

Official Rules- NO PURCHASE NECESSARY

How To Enter: On a 3x5 piece of paper, print your name, address, zip , age and the answers to the six questions listed above. Answers to the questions may be found within the ads, on actual game boxes or from someone who is familiar with the game. All entries must be postmarked no later than February 15, 1991. Send entries to: KOEI CORPORATION, 1350 Bayshore Highway, Suite 540 Burlingame, CA 94010

Every month (November 1990-February 1991) 40 winners will be randomly drawn from all entries having the correct answers. These winners will receive a KOEI Game Player's T-shirt (approx. retail value $12). After all entries are received (postmarked no later than February 15) 50 more prizes will be awarded to winners randomly drawn from all entries having the correct answers. These winners will receive a KOEI Game, choice of title (approx. retail value $65). One grand prize winner will be chosen and awarded Sony's HandiCam (approx. retail value $1,000). Odds of winning depend on number of vaild entries received. Judges decision is final. Not responsible for lost, late or misdirected, incomplete or illegible entries. Winners will be notified by mail. Total approximate retail value of all prizes $5,000. Sweepstakes open to U.S. residents except employees and families of KOEI Corporation, Ltd. All prizes will be awarded. Limit one prize per household/family. No substitutions or cash equivalents. Taxes, if any, are the responsibility of winners. Sweepstakes void where prohibited, taxed or restricted. Winners agree to the use of their names and likenesses for publicity and advertising purposes without additional compensation or permission. (For winners list, send a SASE to same address. Available after March 1, 1991.)

KOEI Games are available in retail outlets nationwide! Your local retailer is the quickest and most convenient way to find the KOEI products you want. If you can't find the KOEI product you are looking for, call us at (415) 348-0500 (9am to 5pm PST) to charge on Visa/MC. Continental U.S. shipping only.

KOEI

We Supply The Past, You Make The History

KOEI CORPORATION One Bay Plaza, Suite 540 1350 Bayshore Hwy. Burlingame, CA 94010 (415) 348-0500

Circle 105 on Reader Service card.

From p. 24

Master. It features a thin, pointed tip that is easy to position on a line. Double-clicking with the stylus button is, however, a pain. In order to effect this common Amiga action, I had to hold the pen nearly perpendicular to the tablet. It was very awkward.

THINGS TO THINK ABOUT

If you are an artist new to graphical interfaces, I think you will like Easyl best of all. It offers an easy transition from paper to electronic drawing. Experienced mouse users, though, may find it slow. For them, I would recommend R&DL's AProDraw package because of its more responsive software, even though I do not like its stylus.

In fact, I found none of the systems suitable in a point-and-click environment. It takes too long to get anywhere. You can speed things up by placing a paper or plastic template on the pad to let you access, say, the DeluxePaint toolbox. (You can even make one by printing a screen dump of the right size.) Still, a tablet will not replace your mouse. Therefore, I suggest you check to be sure that any new units support simultaneous use of the mouse.

Easyl 1.3
Anakin Research
100 Westmore Dr., Unit 11C
Rexdale, Ont.
Canada M9V 5C3
416/744-4246
$349
No special requirements.

SketchMaster
Dakota Corp.
55 Heritage Ave.
Portsmouth, NH 03801
603/427-0100
$449 12 × 12
$699 12 × 18
No special requirements.

AProDraw 2.0
R & DL Productions
40 Liss Rd.
Wappingers Falls, NY 12590
914/298-8968
$499 9 × 6
$599 12 × 12
$999 18 × 12
No special requirements.

DATALINK 2000

Chairman of the modem-features board

By Sheldon Leemon

THE DATALINK 2000 modem from Applied Engineering is not the first internal modem for the Amiga 2000/3000 series of computers, but it can claim a number of other important firsts. It's the only Amiga modem thus far to provide auto-configuring driver software on ROM, the first to offer an MNP level-5 option, and the first with a facsimile-transmission option. Translated into plain English, that means it's convenient, flexible, and expandable.

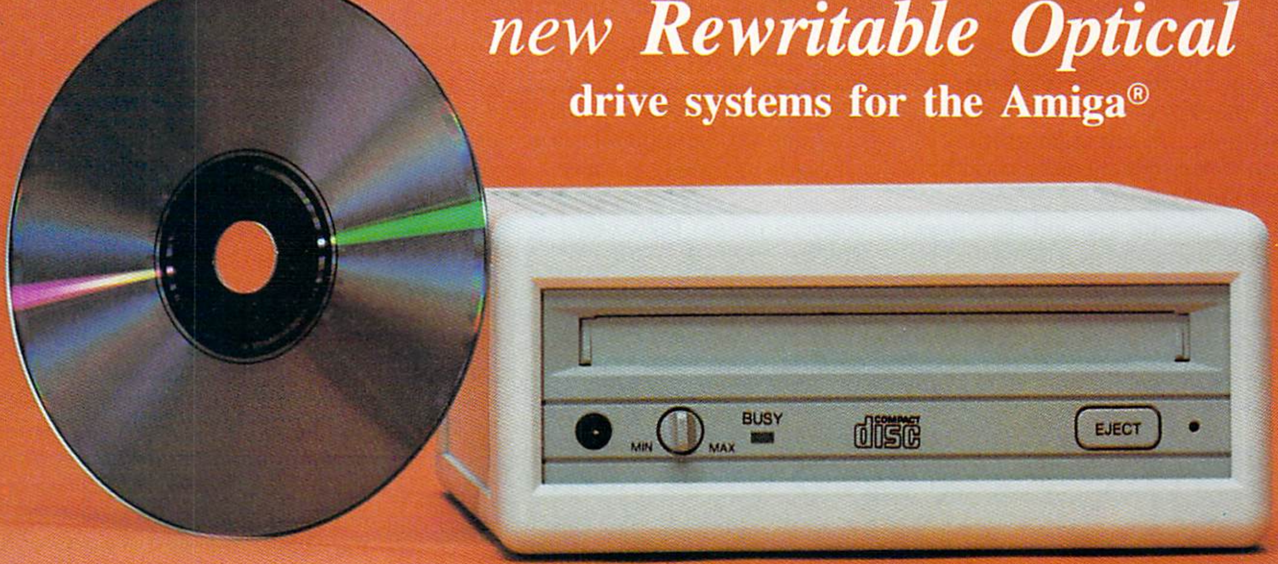
The DataLink (DL2000) modem comes on a half-length plug-in card for the A2000 or A3000. A cable connects the card to a mounting bracket that holds two modular phone jacks—one that connects to the phone-line wall jack; the other for an optional phone connection. Hardware installation is as easy as removing the computer's cover, plugging in the card, and screwing in the bracket. An integral speaker allows you to hear the modem dialing, but there are no software equivalents for the status lights found on many external modems.

The device driver that allows Amiga software to talk to the modem as if it were a serial port is contained on a ROM chip on the card. If your computer has Kickstart version 1.3 or higher (this includes most 2000 and all 3000 systems), the DataLink software automatically adds this driver to your system at power-up time. If, on the other hand, you own one of the few 2000 systems that has a Kickstart 1.2 ROM, you must remove the driver ROM chip from the modem card and install the included disk-based software driver in the DEVS: directory of your boot disk.

With the driver software already installed, your only remaining setup task is to tell your communications program the device name (dl2000.device) and unit number to use. Most commercial terminal programs such as A-Talk III (Oxxi), Baud Bandit (Progressive Peripherals), and Online! Professional (Micro-Systems Software) have menu options or icon ►

CD-ROM & *new* Rewritable Optical

drive systems for the Amiga®



CD-ROM System

Xetec brings the cutting edge of optical technology to the Amiga with the CD*x*-650 SCSI drive systems. Now, unlimited access to vast amounts of information is possible with removable, non-volatile CD-ROM discs having capacities to 650 meg (750 floppies). Reads industry standard ISO 9660/High Sierra discs (same format used in Commodore's new CDTV®).

Audio compact discs. In addition, the CDx systems include the ability to play conventional digital audio CDs with supplied software through stereo line-out or headphone jacks.

Take your pick. The external model, CD*x*-650E, features a rugged, compact enclosure with built-in power supply, and dual SCSI connectors for daisy-chaining. Economical internal model also available.

Free software. Currently available from Xetec is our *Fish & More*™ Vol. 1 CD-ROM which includes the Fred Fish library (up to #370) and additional PD software totalling **over *500* megabytes of data**. *Fish & More* is included free with the purchase of any CDx system (a $2000 value if purchased on floppies!).

CD*x*-650I internal system........$599.00
for the A-2000/2500/3000

CD*x*-650E external system......$699.00
for all models

Amiga and CDTV are registered trademarks of Commodore Business Machines, Inc.

FastTrak Systems

Factory-installed software. All FastTrak and FastCard drive systems are now shipped with user-specified portions of the Fred Fish library installed at no charge. Please contact Xetec for additional details.



Drive systems for the A-500/1000

FastTrak jr 20 meg..............$500.00
FastTrak Quantum 40 meg......$650.00
FastTrak Quantum 80 meg......$895.00
FastTrak Quantum 105 meg.....$985.00

Add-ons

FastRam with 2 meg.............$225.00
FastRam with 4 meg.............$375.00

FastTrak, FastCard, and FastRam are trademarks of Xetec, Inc. Circle 90 on Reader Service card.

Drive systems for the A-2000

FastCard Plus (bare).............$175.00
FastCard Plus Q40 0 RAM......$550.00
FastCard Plus Q80 0 RAM......$810.00
FastCard Plus Q105 0 RAM....$899.00
1 Meg SIMM module.............$75.00
4 Meg SIMM module..................call
Mini FastCard (bare)..............$75.00



NEW PRODUCT

MO*x*-600 Rewritable Ricoh 600 meg Magneto-Optical Drive. Complete system includes enclosure, power supply, fan and one cartridge.
Factory direct *only*...............$3600.00
Extra cartridge.....................$229.00

Technical assistance. Through our phone support and 24 hour BBS — friendly service when you need it.

Order information!
For orders only........1-800-445-0611
For information........(913) 827-0685
FAX.....................(913) 827-6023
BBS.....................(913) 827-1974

Mastercard, Visa, American Express, money orders, and C.O.D. welcome.

xetec

Excellence in Electronics
2804 Arnold Road
Salina, Ks. 67401
Dealer inquiries welcome

ToolTypes that allow you to specify a device and unit number other than the standard unit 0 of serial.device. Using such programs, you can operate up to five internal DataLink modems at once, using unit numbers 1 to 5.

Many older commercial and shareware programs do not make provisions for alternate serial devices, but you can use some of these programs with a single DataLink; just use the included AESetModem program to change the serial.device name in the program code to dl2000.device (a version of the shareware program AZComm that includes this change is provided). However, some of the older terminal programs that have not been revised lately may not work with the DL2000.

I Want My MNP

Once you have set your terminal software properly, the DL2000 acts as any Hayes-compatible 2400-baud modem. For $30 more, however, you can add a level-5 implementation of the Microcom Networking Protocol (MNP-5 for short) in the form of a chip that plugs into the board. When you use the board to communicate with a remote system that also has MNP-5 capabilities, this option provides both error-correction and data-compression features.

Error correction means that telephone-line noise or other interference will not result in a string of weird-looking characters, because data is checked at both ends for accuracy before anything is printed on the screen. Data compression means that information is "squeezed" before it is transmitted (so that fewer characters need to be sent over the phone lines), and then decompressed at the other end. This is the hardware equivalent of using a file-compression program like LHArc or PKZip to reduce the size of a file. Depending on the nature of the material sent, data compression can almost double the speed at which data is transmitted.

There are some things to keep in mind, though, when using MNP. First, if the modem you are communicating with is not equipped with MNP, your MNP settings may actually impede connection to the remote system or interfere with protocol transfers. For example, with certain MNP settings enabled, I could not receive files from the PeopleLink information service using the Telenet packet-switching network and the WXModem transfer protocol.

Few commercial information services use MNP modems, but many local bulletin boards do (the Courier HST modems that are popular with system operators include MNP). Of the systems that have MNP, not all support level 5, which means that they provide error correction, but not data compression. Also, MNP-5 will not produce large speed increases when transferring files that have already been compressed by some other method, such as by an archiving program.

Because most program files that you can download have already been compressed, the bottom line is that MNP-5 is useful mainly for speeding up text transmission and screening out spurious char- ►



ORE WARS
Interplanetary ore excavation fleet commanders are a different breed. They've mastered military strategy. They're expert battle tacticians. But most of all they're cut-throat intergalactic capitalists looking for a quick buck.
And no place offers bigger rewards than FULL METAL PLANET. Rich with precious ore and teeming with danger. At your disposal is a state-of-the-art excavating armada: Attack boats, barges, tanks, transporter crabs, and the unique "Weather Hen."
But you can bet your equally well equipped competitors will try to turn your mighty fleet into scrap metal the first chance they get.
• Intense strategy and military-simulation
• 1 to 4 players – human or computer
• Easy-to-use icon interface
• Ripping graphics and digitized sound
• Complete game-scenario control
DRACONIAN
©1990 Infogrames. United States and Canadian Copyright Data East USA, Inc. Made in the USA.
FULL METAL PLANET
IRON GUTS MORLA
SECRET
IRON GUTS MORLA
DRACONIAN
Now available at your local software retailer for the Amiga and IBM PC and compatibles.
Or contact Data East USA, Inc., 1850 Little Orchard St., San Jose, CA 95125. (408) 286-7074
Circle 233 on Reader Service card.

acters. It is a nice option to have, but you will generally want to turn it off when using systems that do not support it.

Another option, due to be available for the DL2000 by the time you read this, is Send-Fax. According to Applied, this $39 hardware/software option will allow DataLink to send (but not receive) fax messages to any level-3 fax machine at a speed of 4800 bps (baud per second). The software includes a Preferences-level driver that lets you "print" a document to the fax modem from a word processor, as well as software for transmitting text and graphics directly from the screen.

It is also slated to include a phone book for storing fax numbers and a distribution list for automatically sending the same message to a number of fax machines. Although the fax option will restrict you to sending at 4800 bps initially, Applied Engineering plans to offer two upgrades: a 9600 bps rate and message reception.

YOUR TURN!

DataLink 2000 was easy to install, and the instructions are good. Applied put a program on the disk that I can run with my favorite telecommunications program, Access, so that Access will look internally instead of to the serial port. I think that option is really great, and it works just fine.

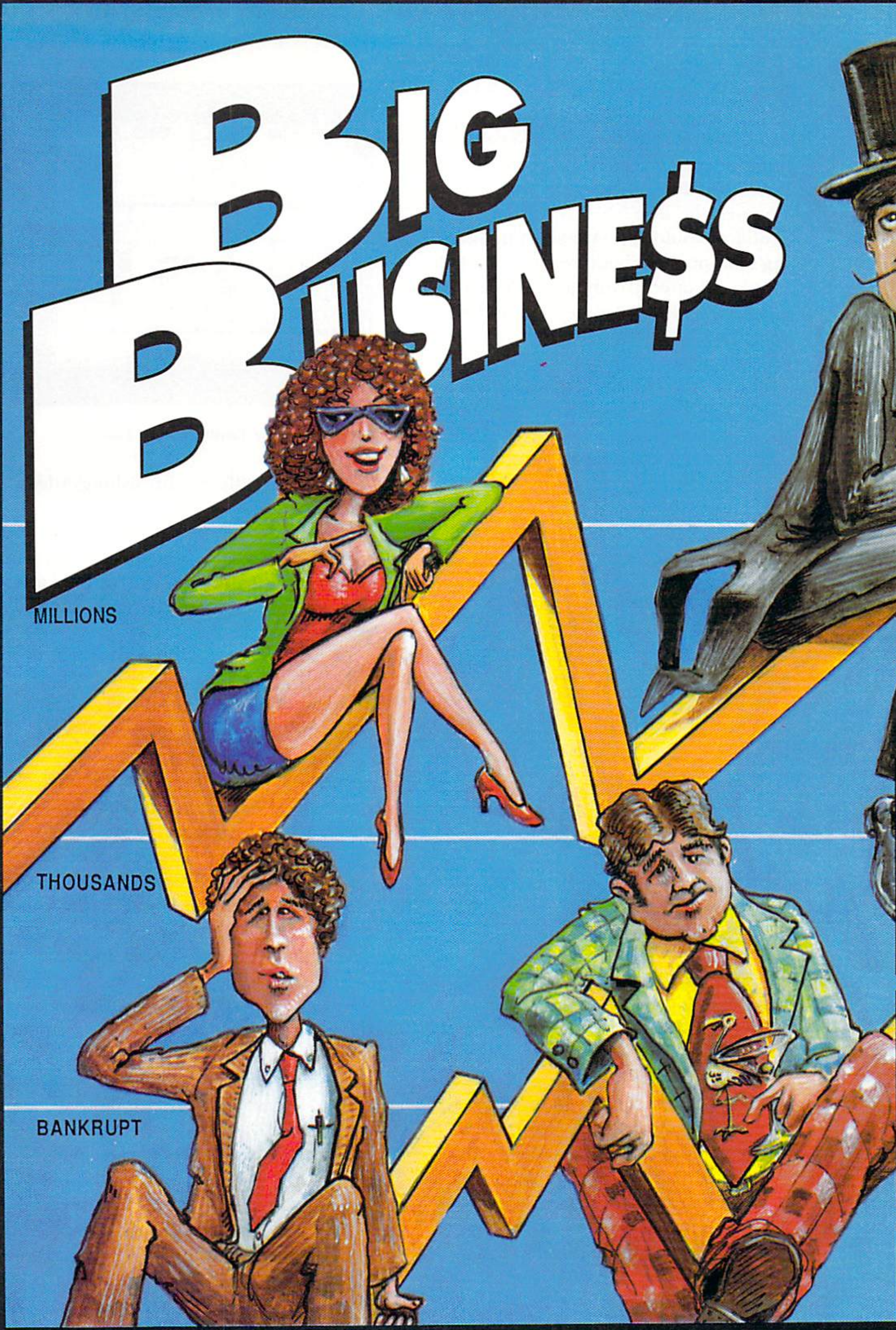
I've never seen a manual for a modem that's as good as this one. There's stuff in it that I'll probably never use, but I'm glad to know it's there. I have the MNP-5 option, but I haven't used it because I'm on CompuServe, which doesn't support it. I've already ordered the fax option, too. I'm pretty satisfied. . .you can't beat the five-year warranty!

Kathy Kolb
Williamsport, PA

HOLD THE LINE

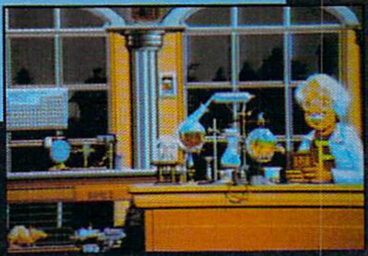
In operation, the DL2000 performed with few problems other than the inevitable confusion of trying to match software settings to the modem hardware (though the speaker did not work on one of the two units Applied Engineering sent for review). The modem driver software did not exhibit any of the problems I experienced previously with the Supra 2400zi internal modem when uploading to CompuServe from Online! Professional, using the Quick B protocol. On the other hand, Online! Pro's redial option did not work with that program's default initialization string; when I changed the string, it worked fine. I also found some quirks in trying to use commercial packet-switching networks with all of the MNP options turned on. When I changed the modem settings back to the Hayes standard, these problems vanished.

Although the Applied Engineering technical-support people were friendly and helpful, I still had to figure out most of my settings by trial and error. (The fact that the manual lists a wrong number for technical support didn't help.) As with most manuals for modems, DataLink's contains a complete description of the modem's command set, but little in the way of practical explanation. For example, it describes the features of MNP without telling you which boards are most likely to support it, which transfer ►









Amiga screens shown

A SEMI-REALISTIC WACKY BUSINESS SIMULATION!

Have you ever wanted to head your own company? Are you tired of others making decisions that determine your daily fate? Or do you just want to conquer your friends in a battle of financial wit and skill? Well, want no more, 'cause now there's BIG BUSINESS.

Manage advertising budgets, research and develop new products and operate factories. Initiate takeovers, detect and catch corporate spies, start law suits and create worker's unrest in your opponents' companies.

You don't have to be a business genius to enjoy this game. With its beautiful graphics and excellent game play, it's fun for everyone!

PLUS FREE BONUS GAME: WALLSTREET A realistic stock market simulation complete with individual portfolio database and educational stock market trivia.

Available for: Amiga 500, 1000, 2000, 2500 and 3000.

Retail price: $49.95. Visit your local software retailer or call 1-800-783-8023 to order.

Circle 214 on Reader Service card.

DigiTek Software
8910 North Dale Mabry
Executive Center, Suite 37
Tampa, FL 33614
(813) 933-8023

protocols to use with it, and what kinds of problems you might run into when using the MNP settings. Neither did I see any speedy replies to the questions posed by Amiga owners on the Applied Engineering BBS.

Still, I would rate Applied Engineering's support as about average in a field that is admittedly complex. The fact that the DataLink 2000 comes with a five-year warranty demonstrates a strong commitment to standing behind the product. And the fact that Applied Engineering has developed an Amiga-specific modem (and potentially a fax product as well) speaks well of their new-found commitment to the Amiga.

DataLink 2000
Applied Engineering
PO Box 5100
Carrollton, TX 75011
214/241-6060
$159
No special requirements.

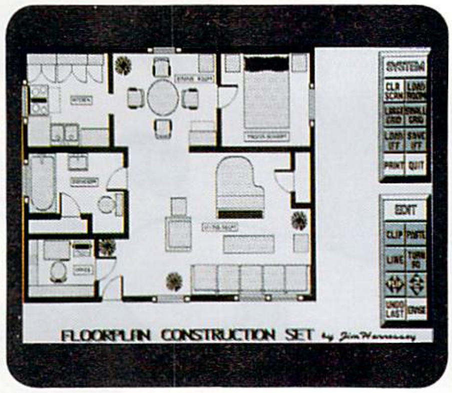
FLO/Floor Plan Construction Set

Putting your house in order

By Gary V. Fields

FLO/FLOOR PLAN Construction Set can help you resolve trying difficulties such as whether or not there will be enough room for both your desk and pool table in your new den, or where your office or home furniture should go so you can easily direct the movers. Using the program's simple clip-and-paste feature, FLO helps you arrange furniture electronically with two screen displays, one for design surfaces (in hi-res, black-and-white images) and another for images to be clipped.

You select features such as clip, paste, rotate, erase, print, and load IFF from a row of icons. Other more complex operations, such as "clip from the design screen" are available from the pull-down menus. Most features, but not all, can be selected from the keyboard, as well. The two-disk set holds several rooms—including bedroom, living room, office, kitchen, rec room, and utility—each



Rearrange your furniture with FLO.

packed with different furnishings (desk, tables, typewriters, table saws, sinks, doors, windows, walls, potted plants, and so forth). So, regardless of what you plan to build or furnish, constructing an accurate facsimile is relatively simple and painless with FLO.

Because of the program's name and packaging, I assumed FLO was a bargain-priced, architectural CAD (computer-aided design) program. Instead, it is a specialized paint program utilizing hi-res bitmap images, not traditional structured CAD drawings—and it has only a limited number of features. Anyone looking for the power of a professional drafting program will be disappointed with FLO, as it will not let you design a true-to-scale blueprint.

Getting over my initial disappointment, however, I must confess that the program does very well what it was designed to do: plan and design home and office interiors. It probably would be most effective when used in conjunction with your favorite full-scale paint program.

Although FLO itself operates much like a conventional paint program, it has too few features to be compared with the more powerful (and more expensive) ones. It saves standard IFF files and will load those created by other paint programs, providing they were created on a hi-res screen with two colors and include ".FCSpic" as an extension to their filenames. When I tried to load a standard DeluxePaint III image using four colors, the program responded with a full-blown guru alert.

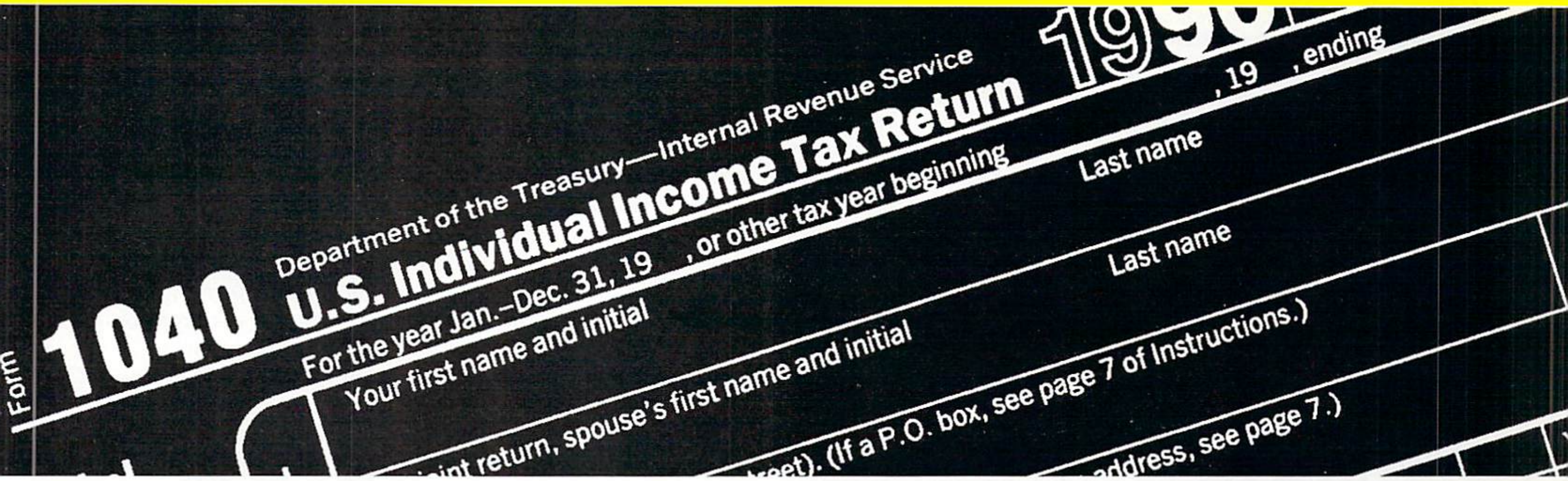
Roomful of Features

What I liked best about FLO was its data ►

It's that time again.....

dataTAX™

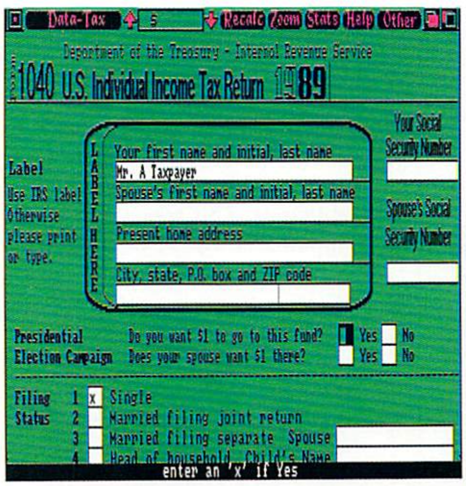
Tax Preparation and Planning Tool

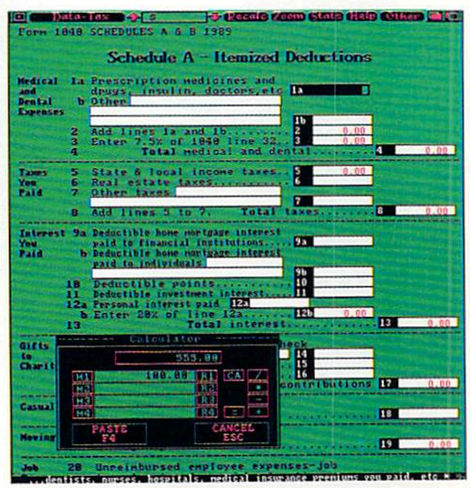


* Scrollable on screen lookalike forms and schedules
* Line by Line Data Entry Prompts
* On Screen IRS Instructions
* Prints Government Approved Lookalike Tax Forms on Plain Printer Paper.
* Prints Scanned images of Form 1040
* Automatically Calculates Deductions and Refunds
* Itemizes and creates overflow forms
* Override any cell to test "what-if" tax strategies
* Add Notes to expand information cells
* Pop up Calculator with cut & paste
* Load and save multiple tax returns
* Work with 2 tax returns at the same time

V5.0 includes

* Form 1040 and 1040a, Schedules A, B, C, D, D1, E, F, R, SE, 2106, 2441, 3903, 8606, 4562, 8615, 4868
* Plus **ELECTRONIC Filing support built in!**
No Extra modules to buy or learn.
Why Wait? Get your refund in 2 to 3 weeks!





Only $75 Annual Updates $29

(plus $5 for shipping and handling)

See your Amiga dealer or **call 1-800-387-1942**

Circle 34 on Reader Service card.

Datamax Research corp 269 Portage Road, Box 1147 Lewiston NY 14092 (416) 250-7424

Tax Break users - we have changed our name to dataTAX. Call 416-250-7424 or write to order your update.

Canadian Version also available $59 (cdn) Updates $29. Includes T1, Schedules 1-7,T1C,RRSP,T4,T5,Business Income,Child Care,Rental,MinTax,CapGains and more! All provinces and territories plus Quebec provincial forms. Add 4$ shipping and handling and 7% GST. dataTAX is also available for PC and compatible computers. dataTAX is a trademark of Datamax Research



YOUR TURN!

FLO is not very sophisticated, but it's great for the price. We used it when we built an addition on the house, and it was really nice for setting up. The program was great for getting things to scale; then we could print the results and take it to the builders. The first version had some problems, but Gramma Software replaced my disk right away. They were really nice.

Steve Latham
Gadsden, AL

images: walls, office, bedrooms, shops, and provisions for features accommodating the handicapped. They are all well done and the rooms come in both full and ¼ scale. If you own a standard paint program, you may want to use FLO to clip, paste, and save your data images as IFF screens, and then load them into the paint program to design your floor plans. One clearly superior feature is that, unlike some paint programs, FLO rotates clips without distorting their proportions.

The program, however, is neither fast nor flexible. For example, there is no simple way to construct other home or office furnishings, and you can rotate the ones included only in 90-degree increments. Also, there is no text mode, so adding notes to your design is impossible (although you *can* clip and paste the text labels found in the room screens).

Unfortunately, it is easy to outpace the program while inputting mouse or key commands. This speed disadvantage is compounded by the fact that commands are held in the computer's buffer and executed in sequence. This can result in the program executing repetitive commands—or appearing to lock up—simply because you may click on an icon several times in trying to get it to activate without realizing that the program was still processing the first chore. It is true that command buffers can sometimes be helpful, but I have found that to be the exception rather than the rule. I'd prefer FLO to do a key buffer dump after each operation to avoid repetitive errors.

Wish List

FLO is far from the perfect planning or designing tool. Its lack of four important features prevent me from recommending it without reservation. A text mode, a magnify mode, a snap-to-grid option, and an input buffer dump would make a lot of difference.

With that said, let's remember that the program retails for $80. Professional paint and CAD programs can cost many times that amount. In my opinion, the clip data alone is worth the asking price, even if you only convert them for use with another paint program. FLO/Floor Plan Construction Set is a planning tool and nothing more. As long as you buy it to use only for that purpose, and not for painting or drafting, you should be happy with your investment.

FLO/Floor Plan Construction Set
Gramma Software
17730 15th Ave. NE, Suite 223
Seattle, WA 98155
206/363-6417
$79.95
No special requirements

TAKE YOUR TURN!

We want to know what you like and don't like about your new Amiga hardware and software. Some products we are looking at for upcoming issues are:

3D Text Animator (Mindware)
ABCgames (Parth Galen)
AdSCSI 2000 with Q40S (ICD)
Advantage (Gold Disk)
A-Max II (ReadySoft)
Elan Performer 2.0 (Elan Design)
Home Front (Designing Minds)
MicroTrader 4.0 (MicroActive)
Office (Gold Disk)
Sterling Service BBS (Free Spirit)
Top Form (Designing Minds)
VidControl (Integral Systems)

To comment on these, write us (Your Turn, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458) or call (800/441-4403, ext. 156) by Dec. 19, 1990. Write or call at any time concerning other new releases. ■

Buy 2, get 1 free!

Buy Any Two AmigaWorld Tool Chest Back Issues, And Get A Third One Free!

#AWTC11. Fix corrupted disks or recover accidently deleted files. Sit back and enjoy original animation and sound clips. Enjoy colorfully wacky, shoot 'em up Arcade fun. Create single or double image icons, in four to eight colors. Get a rich assortment of HI-RES clipart monsters.



#AWTC12. Save money with a utility program which enables you to format disks that AmigaDOS chokes on. Generate different types of graphs. Cut out an excellent collection of B&W clip art for your desktop publishing or graphic design needs. Generate an incredible assortment of colorful patterns. Add dazzle to your animations with detailed 3-D spaceships.

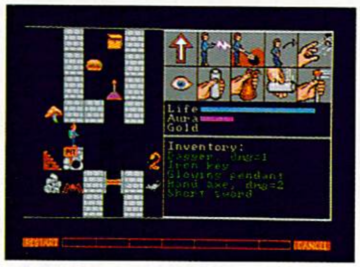


#AWTC13. Plot your biorythms. Make drive head cleaning easier. Create spectacular images with mandelbrots. 3-D objects perfect for ray traced animations — a sailboat, hot air balloon, windmill, and a lighthouse. A CLI utility to help you find files quickly and easily. Plus holiday clipart, an AmigaFlight animation, and a technical discussion on how AmigaDOS stores information to disk.

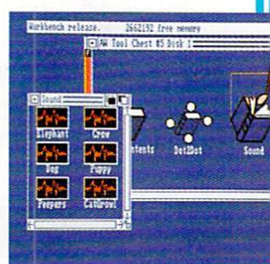
#AWTC14. A 3D graphics special issue, containing vector objects, TicTacToe, a graphing program, and 3D ray traced animation. Keep names and addresses organized with a friendly database and addressbook. Perform an analysis of digitized sound and display it in a graphic manner. Get B&W clip art food images suitable for desktop publishing.

#AWTC15. A best selling issue! Combine great graphics with digital sounds to get an entertaining Amiga version of the classical connect-the-dot game. Insert a nice assortment of digitized animal sounds into your animations. See an instructive rendering of Cartoon Man in various stages of animation. Test your reflexes with a high-speed arcade game. Make multiple copies of custom labels.

#AWTC16. Generate complex 3-D vector objects of a wide variety of terrain, from flat plains to rocky mountains. Plot out mathematical equations. Format your text fields to print on both sides of paper. Plus six digitized sounds perfect for animations and multimedia presentations and a mouse driven graphic adventure game with excellent digitized sounds. Also includes Tinyball, "The World's Smallest Baseball Arcade Game."



#AWTC21. Battle your computer to take over the planet Circe. Assign RGB values to printer and screen output. Get a powerful database manager suitable for home and small business. Create animated sprites by editing up to100 frames at once. Execute CLI programs, batch files and ARexx scripts with the simple click of a gadget.



#AWTC22. Design instruments and waveforms for use in other programs. Play your Amiga keyboard like a piano. Change the width, height, location, title, colors and depth of the CLI window with a single command. See how a piston works with a Turbo Silver animation. Plus a slick checkbook manager and a file encryption and decryption tool.

✓YES, I want to buy two Tool Chest Back Issues for $29.90 and receive a THIRD ONE FREE! I save $14.95.

My selections are:

____________ # ____________

____________ # ____________

____________ # ____________

☐ I am only interested in one issue at this time. Please send me the following issue for $14.95:

____

Name ____________

Address ____________

____

City ____________ State ______ Zip ______

☐ My check/money order is enclosed

Charge My:

☐ MasterCard ☐ VISA ☐ Am Exp. ☐ Discover

Card# ____________

Exp. Date ____________

Signature ____________

Foreign orders add $2.50 for delivery. Payment required in U.S. Funds which can be drawn on a U.S. Bank. Note that some animations require 1MB of memory. TCBI191

AMIGA WORLD

STEP INTO THE WORLD OF AMIGA . . .



The Pathway To Your Imagination

For a computer as extraordinary as the Amiga™, you need a magazine that can match its excellence, AmigaWorld.

AmigaWorld is the only magazine which provides you with ideas and information to get maximum performance from the Amiga's tremendous power and versatility.

Each issue gives you valuable insights to boost your productivity and enhance your creativity.

Whether you choose the Amiga as a serious business tool for its speed and multitasking capabilities. . .or for its superb graphics, drawing, color (over 4,000 colors), and animation. . .or for its state-of-the-art music and speech. . .or for its scientific and CAD abilities, AmigaWorld can help you achieve superior results.

With its timely news features, product announcements and reviews, useful operating tips and stunning graphics, AmigaWorld is as dynamic as the market it covers.

Don't wait! Become a subscriber and save nearly 37% off the cover price. Return the coupon, or for immediate service, call toll-free 1-800-258-5473. In U.S.A.

Save 37% ☐ *YES!*

I want to discover the full potential of this powerful machine. And save 37% off the cover price. Enter my one year subscription to *AmigaWorld* for the low price of $29.97. If I'm not satisfied at any time, I will receive a full refund—no questions asked.

☐ Payment Enclosed ☐ Bill Me

Name ____________________

Address ____________________

City ____________________

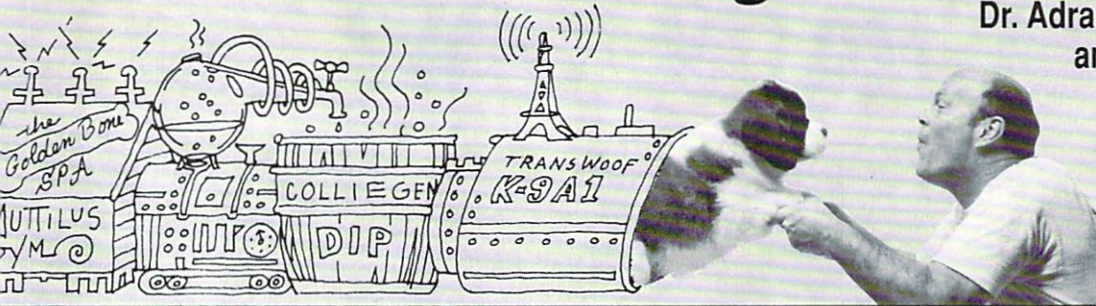
State ____________ Zip ________

Canada & Mexico $38.97, Foreign Surface $49.97, Foreign Airmail $84.97 (U.S. Funds drawn on U.S. Bank). Prepayment is required on foreign orders. All rates are 1 year only. Please allow 6–8 weeks for delivery.

AmigaWorld 4WAN4

PO Box 58804, Boulder, CO 80322-8804

- Celebration Savings!



"Barney, my Barney! You're alive. Dr. Adram's evil plan has backfired and you've been transformed into my puppy again. Now you and I can continue as the best mail-order team in the Amiga market!"

HARDWARE

BASIC CABLE
Cable, Amiga 1000-Parallel Printer (8ft) **$11**

Cable, Amiga 500-Hayes Modem (8ft) **$11**

Cable, Amiga 500-Parallel Printer (8ft) **$11**

Dr T's
Phantom **$179**

EMCO
2-Way DB 25 Switchbox **$19**

4-Way DB 25 Switchbox **$24**

EXPANSION SYSTEMS
A500 Baseboard
0K **$109**
512K **$133**
1Meg **$157**
2 Meg **$205**
4 Meg **$301**

*FREE SECOND DAY AIR on all EXPANSION SYSTEMS products

ICD
Adram 540
0K **$109**
512K **$133**
1Meg **$157**
2 Meg **$205**
4 Meg **$301**
*FREE SECOND DAY AIR on all ICD products

KONYO
Master 3A1D 3.5 External Drive **$129**

Golden Image Hand Scanner **$269**

MICROSPEED
AmTrac Tracball **$64**

MICROWAY
Flicker Fixer **$367**

MIGRAPH
Migraph Hand Scanner **$319**

NEXO
Super Hi-Fi Stereo Speaker **$119**

PASSPORT
Mastertracks Pro **$219**
Passport Midi Interface **$89**

PRACTICAL SOLUTIONS
Cordless Mouse **$84**

PROGRESSIVE
Baud Bandit 2400 Modem **$99**
Baud Bandit 2400 MNP Modem **$139**

Minigen **$187**

READY SOFT
AMAX II (Macintosh Emulator) **$139**

HARDWARE

SHARP
JX-100 Scanner w/Cable & Software **$719**

SUNRIZE
Color Splitter **$109**
Perfect Sound **$64**

TS MICROTECH NEW
Banx **$12**

US ROBOTICS
Courier 2400 External Modem **$319**

Courier HST 9600 Baud External Modem **$619**

GREAT VALLEY PRODUCTS

A2000 Accelerator (68030/28Mhz) **$699**

A2000 Accelerator (68030/28Mhz+68882) **$869**

A2000 Accelerator 4 Meg Ram **$749**

A3001 Accelerator (68030/28Mhz+68882) 4 Meg Ram **$1449**

A3501 Accelerator (68030/33Mhz+68882) 4 Meg Ram **$1649**

A3050 Accelerator (68030/50Mhz+68882) 4 Meg Ram **$2349**

IF YOU DON'T SEE IT, CALL US!

Hard Card 2
Controller Only **$159**
40 Meg Quantum HD **$489**
50 Meg Removable Media Drive **$859**
80 Meg HD **$569**
100 Meg HD **$829**

Hard Card 2 + RAM
Controller Only **$199**
40 Meg HD **$543**
80 Meg HD **$619**
100 Meg HD **$879**

Impact A500
40 Meg HD **$589**
52 Meg HD **$699**
100 Meg HD **$949**

Impact XC
Ext Case w/Power Supply **$199**
50 Meg Removable Media Drive **$919**
150 Meg Tape Backup **$799**

JOYSTICKS

Epxy 500XJ **$12**
Gravis Mousestik **$59**
Gravis Switchstick **$29**
Quickjoy **$24**

MAGNAVOX

RGB Color Monitor Model No. 1CM135 **$279**

SUPRA CORP.

Amiga 3.5 External Drive **$99**

SCSI Interface w/Clock (Amiga 1000) **$179**

Supra 2400 Baud External Modem **$99**

Supra 2400 Plus (External Modem w/MNP) **$149**

Supra 2400zl Internal Modem (Amiga 2000) **$119**

AMIGA SupraDrive
500 XP 20 Meg **$539**
500 XP 40 Meg **$649**
500 44 Meg Rmvble **$919**
1000 40 Meg **$649**
1000 44 Meg Rmvble **$999**
1000 80 Meg **$869**
2000 40 Meg **$454**
2000 44 Meg Rmvble **$799**
2000 80 Meg **$659**
2000 105 Meg **$703**

AMIGA Supra Ram
500 512 K w/clock **$64**

ROGER'S SUPER SLEUTH DEAL

EXCELLENCE (VERSION 2) by Microsystems

The hottest wordprocessing program available! $119 (1 Meg RAM required)

SUPRA CORP.

2000 0K **$119**
2000 2 Meg **$209**
2000 4 Meg **$299**
2000 6 Meg **$389**
2000 8 Meg **$479**

WordSync SCSI Interface (Amiga 2000) **$109**

*FREE SECOND DAY AIR on all SUPRA products

APPLIED ENGINEERING

Timemaster 500 **$39**

Heavy Duty Power Supply (A500) **$79**

Amiga 3.5 HD Floppy Drive **$189**

RamWorks 2000
0K **$109**
1 Meg **$157**
2 Meg **$205**
4 Meg **$301**
6 Meg **$397**
8 Meg **$493**

DATALINK
2000 (Internal 2400 Baud) **$124**
2000 (w/MNP5) **$149**
Express (External 2400 Baud) **$157**
Express (w/MNP5) **$189**

DISKETTES

SONY:
10-Pack Boxed **$12**
10-Pack Bulk **$9**
50-Pack Bulk **$42**
100-Pack Bulk **$79**



GOOD CONQUERS EVIL AGAIN! WELCOME BACK BARNEY!!

Be an F.B.I.* Special Agent at Anytime!
We are now open 24 hours a day/ 7 days a week for orders. And there are no modems or online services required! So now you can be a special agent on the Find Barney Immediately case by placing your order at anytime.

Roger Coats
P.O. BOX 171466
SAN DIEGO, CA 92197

BARNEY

PRICE QUOTES & TECHNICAL SUPPORT
1-619-274-1253
8am - 5pm PST
Monday-Friday

Committed to value since 1985

• Dunn and Bradstreet Number Upon Request • Watch for our new 1991 antics–*Roger* • *F.B.I.–Find Barney Immediately
WE ACCEPT SCHOOL PURCHASE ORDERS • OVERSEAS SHIPPING IS OUR SPECIALTY * Continental U.S. only. Circle 248 on Reader Service card. VISA MasterCard

WHAT'S NEW?

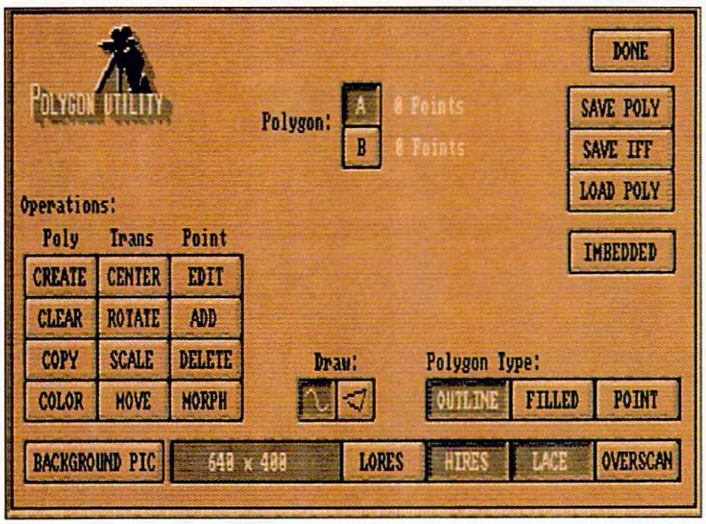
Ring in the New Year with the latest in Amiga hardware and software products.

Compiled by John Wolfskill

Author! Author!

DOES THE RIGHT Answers Group have the answer? **The Director Version 2** ($129.95) comes with enough new features and enhancements to fill a Greyhound bus. The animation and multimedia presentation package now operates from its own script editor with pulldown menus, and it provides customizable function keys as well as a built-in IFF file viewer. New animation features include automatic double buffering, background ANIM and IFF file loading, palette crossfades, sprite animation, polygon rotation, morphing, and more.

In the sound department, there's a new SMUS module with stereo sound and the ability to play back large sound samples in Fast RAM. The Director's scripting language also has undergone a face-lift. Director Version 2 allows you to use 16-character filenames, sports seven new commands, and provides full ARexx support. An upgrade for Director 1 users is available for $60, plus $10 postage and handling. (The Right Answers Group, Box 3699, Torrance, CA 90510, 213/325-1311.) *RS# 504.*



New with Director 2 is a polygon utility.

True 24-Bit Color: That's Not Ham

THAT'S WHAT THE people at M.A.S.T are saying these days. The company recently unveiled **Colorburst** ($495), a pass-through hardware device that attaches to the RGB video port of any Amiga to provide 24-bit color graphics in 16 million colors. You can combine Amiga graphics with Colorburst's output on the same screen and set each pixel to a different and independent color. Colorburst supports overscan, interlace, and non-interlaced screens, and it provides NTSC and PAL broadcast-quality video output to drive your favorite genlocker. Palette-mapped displays also allow software to adjust white balance, do palette fades, and perform other special video effects. (M.A.S.T., 1395 Gregg St., Sparks, NV 84931, 702/359-0444.) *RS# 505.*

Desktop Video To Go

VIDEOMASTER VM-2 ($1295) provides Amiga video professionals with a genlock, video switcher, and special effects generator in a single box. The external unit combines Amiga graphics with an external video source (Composite, S-VHS, Hi-8 , or Ed Beta) and comes with an automatic RGB splitter. The compact unit's special-effects generator produces horizontal, vertical, circle, and inverted wipes, which can be automatically timed, or controlled manually.

VideoMaster generates its own vertical synchronization signal for recording Amiga graphics when no external video-reference signal is available. You can also use its built-in, key-out signal to drive a production mixer. The internal video switcher provides noise-free vertical interval switching between the Amiga and external video inputs. VideoMaster VM-2 is available in both NTSC (RS-170A) and PAL versions. (VidTech International, Inc., 2822 NW 79th Ave., Miami, FL 33122, 305/477-2228.) *RS# 506.*

AND THEN SOME

GOLD DISK NOW offers upgrades for three of its most popular software packages. A significant improvement to **Professional Page 2.0** ($395) is the Pantone Matching System (PMS) that provides industry-standard color reproduction for desktop publishers. Other new features include a built-in word processor with a 90,000-word spelling checker, text and graphics rotation, style and paragraph tagging, 24-bit color support, automatic page numbering, word-spacing controls, and a video tutorial.

Advantage Version 1.1 ($195) pro- ►



A NEW WIZARDRY

Ten years ago, Wizardry set the standards in FRP. Now, after two million copies have been sold and 25 international awards have been won, Bane of the Cosmic Forge raises and redefines those standards. This new Wizardry, the truest simulation ever of Fantasy Role Playing, will push your computer, your mind and your sense of adventure to their very limits.

True FRP Simulation!

Like a true game master, Bane of the Cosmic Forge rolls the dice, consults its charts and applies the rules. From the 400 items of armor and weaponry researched for authenticity – right down to their weights – to the realistic combat structure – incorporating Primary and Secondary attack – everything, absolutely everything, is calculated.

Full-Color, Animated Graphics!

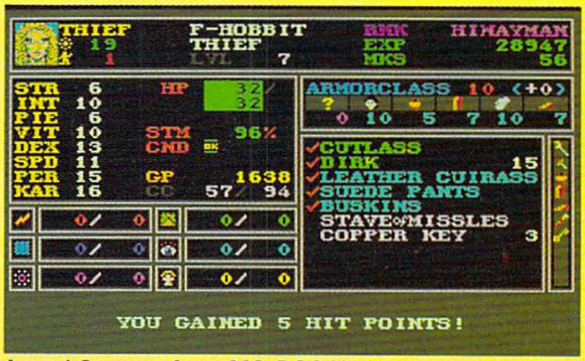
You'll see swords swinging before your eyes; creatures of all shapes and forms will move before you; spells coming from your magician will swirl through the air. You'll walk under gargoyle-laden arches and watch candles flicker in their sconces. Your PC's internal speaker will play all of these digitized sounds without any add-on hardware . . . swords swinging, monsters venting their anger and spells letting fly.

Uncompromising Variety!

- 11 Races
- 14 Professions with Ranks
- Dozens of Weaponry, Physical and Academia skills
- Multiple Fighting and Parry Modes
- Ranged, Primary and Secondary Weapons
- Six spellbooks, 462 spell combinations
- Multiple Armor Classes

Artificial Intelligence!

Find the ancient and cryptic dwellers who can aid you in your quest. Talk to them as you would your friends – in sentences. Only through the power of the latest in programming technology could the full dimensions of conversation this real be possible.



Actual Screens from MS-DOS Version



Now Available for: MS-DOS, Amiga & Macintosh

SIR-TECH

P.O. Box 245, Ogdensburg, New York 13669
(315) 393-6633
To order: Visit a Dealer or call 1 (800) 447-1230

Circle 66 on Reader Service card.

vides 37 new spreadsheet functions and enhanced Lotus 1-2-3 compatibility. Numbers are now stored and displayed with 13 digits of precision for greater accuracy. The company claims math calculations are 40% faster, and worksheets load and save up to 80% faster. Advantage 1.1 now also supports Motorola 68881 and 68882 math coprocessors. In addition, a new feature allows you to execute ARexx scripts automatically when a spreadsheet loads.

To cap a host of improvements, Gold Disk's word processing package (formerly called Transcript) now sports a new moniker—**TransWrite**. It offers custom screens and variable screen colors, allows you to load and save configuration files, and is now compatible with Workbench 2.0. Other goodies include a spelling checker, file encryption and decryption, multiple search-and-replace, the ability to save printer settings with a file, and a more intuitive interface. (Gold Disk, 5155 Spectrum Way, Unit 5, Mississauga, Ont., Canada L4W 5A1, 416/602-4000.) *RS# 507.*

Flicker Free Video ($499.95) is the first flicker-free video card to work with all A500, 1000, and 2000 PCs. The small, multi-layer card works with a standard IBM VGA or multifrequency monitor to eliminate interlace flicker and visible raster scan lines. The board requires no soldering or heavy technical knowledge to install, and it doesn't occupy the A2000's video slot. Both PAL and NTSC video signals are automatically recognized by the card. The board relies on three megabits of onboard RAM to provide full overscan screens as large as the Amiga can produce. (ICD Inc., 1220 Rock St., Rockford, IL 61101, 815/968-2228.) *RS# 508.*

Applied Engineering now offers the **DataLink Express** ($159), a 4800/2400 bps modem that supports optional MNP-5 error correction, Bell 103 and 212 protocols, and European CCITT V.22 BIS,V.21 and V.22 standards. A combination hardware and software upgrade called AE Send-Fax allows you to use the DataLink Express as a send-fax modem. Now you can send text and graphics directly from your Amiga's screen to any fax machine. The unit comes with a five-year limited warranty and free communications software. (Applied Engineering, PO Box 5100, Carrollton, TX 75022, 214/241-6060.) *RS# 509.*

Oxxi, Inc. and noted Amiga artist Jim Sachs have combined forces to offer the **Jim Sachs Signature Collection 1991 Calendar**, a collection of 14 stunning computer-generated graphic images. The calendar includes Sach's favorite works, along with a treasure trove of tips for aspiring Amiga artists. (Contact your local Amiga dealer or Oxxi, Inc., 1339 E. 28th St., Long Beach, CA 80806, 213/427-1227.) *RS# 510.*

Who says desktop publishing has to be a serious matter? Not the people at Pelican Software. Billed as the "Light-hearted publishing program," **Pelican Press** ($99.95) is an easy-to-use printing program that lets you create giant posters, newsletters, cards, and even your own custom wrapping paper. The package includes a full-featured paint program and a great selection of professionally rendered clipart. A school version is also available for $119.95. (Pelican Software, 338 Commerce Drive, Fairfield, CT 06430, 800/232-2224.) *RS# 511.*

Free Spirit Software now offers the **Sterling Service BBS** ($149.95), which it calls the "Friendly BBS." According to the company, it's the first BBS system for the Amiga to provide an easy-to-use graphical user interface. It offers six user clubs, with up to eight sections each, ANSI and ANSI-extended color graphics, online menus and help, sysop remote CLI access, and an optional on-line screen editor. You can attach files to E-Mail messages and view a file prior to downloading. (Free Spirit Software, PO Box 128, 58 Noble St., Kutztown, PA 19530, 215/683-5609.) *RS# 513.*

AMKIT 2.0: An Introduction to the Workbench and CLI ($49.95) is a new version of International Technologies' tutorial system previously available for AmigaDOS 1.3. The new kit comes with a well-organized manual and three disks designed to help you over the hump with all that AmigaDOS 2.0 offers. The disks also contain over 30 fully documented public-domain programs. (International Technologies, 2302 D Ave., Suite 203, National City, CA 92050, 619/477-2024.) *RS# 512.*

Gain better control over your DeskJet (Hewlett-Packard) printer with **DJHelper** ($50). DJHelper offers improved control over positioning of graphics, page dimensions, and gray-scale manipulation, as well as providing binary editing in both Hex and ASCII and direct selection of typeface, character, and set. You customize your printer's output to define the typeface as pica, elite, fine, or enlarged. Or, if you wish, you can replace Amiga command codes with your own definitions or edit and transmit any printer-control sequence. (Creative Focus, Box 580, Chenango Bridge, NY 13745, 607/648-4082.) *RS# 514.* ■

AMW 1-91

800-558-0003 ComputAbility 800-558-0003

Since 1982

Consumer Electronics

APPLIED ENGINEERING™

2400 External Modem
w/MNP 5 & Send-Fax
For Amiga 500/2000/3000
$219

DATA LINK 2000
With all the features of the 2400 Baud External Modem
AND . . . plugs into your expansion port!
$179 Amiga 2000/3000

HIGH DENSITY 3.5" DRIVE
$189

RAM WORKS 2000
0K $109
2 Meg $215

RAM WORKS 500
$65

PRINTERS

Panasonic

1124 - GREAT PRICE!	$279
1180	$155
1624	$329
4420 NEW	$779
4450i NEW	$1219
4455 NEW	$2029

CITIZEN

120D	$139
180D	$159
200GX	$169
GSX 140	$289
Color Kit	$49

star

NX 1001 Multifont NEW	$145
NX 1020 Rainbow NEW	$185
NX 1500 NEW	$289
NX 2410	$239
NX 2415	$385
NX 2420	$289
NX 2420 Rainbow	$319
XB 2410	$409
XB 2415	$529
Color Kit XB 2410/15	$42

AMIGA EXTRAS • AMIGA EXTRAS • AMIGA EXTRAS

Air Drive Int 3.5"-3000	$89
AMAXX II	$137.95
Amtrac Trackball	$69
Color Splitter	$109
Cordless Mouse	$99
DC TV	$395
ECE Midi Interface	$48
Flicker Fixer	$355
Flicker Master	$13
Frame Grabber - Color	$529
Golden Image RAM 500	$49
Golem 3.5" Int Drive	$75
Golem Internal Track Disp	$39
Golem Tower	$299
Gravis Adv. Joystick	$31
Gravis Mouse Stick	$65
Hvy Duty Power Sup100W	$85
LIVE! A2000	$289

VIDEO TOASTER AVAILABLE NOW!

Mega Mid Racer 25Mg	$669
MIDI Gold A500	$59
MIDI Gold Insider A2000	$65
Migraph Hand Scanner	$319
Perfect Sound	$69
Phantom Smpte Interface	$179
Printer Face	$79
Safeskin 2000/500	$17
Sapphire Accelerator Card	$309
Sharp JX 100 Clr Scan	$749
Supercard	$75
Time Master 500	$45
Video Master	CALL
VIP Video Interface	$89
Xspecs 3D	$85

GENLOCKS

Ami Gen/Mini Gen	$94/189
Magni A3000 w/remote	CALL
Super Gen	$609
Super Gen 2000S	CALL
Video Master	CALL
Vidtech Scanlock	$719

688 Attack Sub	31.95
A10 Tank Killer	30.95
A-Talk 3	64.95
Advantage, The 1.1	114.95
Air Strike USA	25.95
Airbourne Ranger	28.95
Altered Destiny	36.95
AMOS	67.95
Amazing Spiderman	24.95
Anarchy	24.95
Arachnaphobia	28.95
Arcade Action Fever	25.95
Arexx	28.95
ASDG Art Depart	57.95
Audio Master 3	64.95
Awesome	36.95
Aztec C Dev V5.0	177.95
Aztrec C Pro V5.0	119.95
BAD	29.95
BAT	31.95
Back To the Future II	31.95
Bandit Kgs/Anc China	36.95
Bane / Cosmic Forge	36.95
Barney Bear each	21.95
Batman the Movie	28.95
Battle Chess	28.95
Battle Command	31.95
Battle Hawks 1942	20.95
Battle Squadron	24.95
Battletech	19.95
Baud Bandit	30.95
Billy the Kid	25.95
Black Gold	24.95
Black Tiger	30.95
Blades of Steel	28.95
Blood Relations	31.95
Blue Max	31.95
Brain Blaster	25.95
Bridge 6.0	25.95
Broadcast Titler 2.0	224.95
Buck Rogers	31.95
Budokan	25.95
Byte N' Back	39.95
Can Do	84.95
Cardinal / Kremlin	30.95
Carmen San Diego/Ea	30.95
Cham/Sci-Mut Prsts	30.95
Champions of Krynn	31.95
Chaos, Dung Mast 2	24.95
Check Mate	34.95
Chessmaster 2100	31.95
C Yaeger AFT 2.0	25.95
Clue	24.95
Codename: Iceman	36.95
Colonel's Bequest	36.95
Conquest of Camelot	36.95
Copyist Apprentice	76.95
Crackdown	31.95
Cribbage/Gin King	25.95
Cross DOS 2.0	24.95
Crossword Const Set	24.95
Curse/Azure Bonds	31.95
Cyber Ball	25.95
Cyber Medix	25.95
Cycles	30.95
Damocles	28.95
Dark Century	28.95
Das Boot Submarine	31.95
Day of the Viper	30.95
Days of Thunder	31.95
Deluxe Music Const	61.95
Deluxe Paint III	94.95
Deluxe Photo Lab	94.95
Deluxe Print II	51.95
Deluxe Productions	128.95
Del Vid 3w/Del Photo	94.95
Dick Tracy	30.95
Digidroid	59.95
Digimate 3	24.95
Digipaint 3.0	58.95
Digiview gold	118.95
Dino Wars	24.95
Director 2.0	75.95
Toolkit	24.95
Disk Master	28.95
Disk Mechanic	54.95
Dr. T's M	84.95
Dr. T's Midi Rec Stud	28.95
Dos 2 Dos	30.95
Double Dribble	19.95
Dragon Force	31.95
Dragon's Lair	33.95
Dragon's Lair II	43.95
Dragon Lord	31.95
Dragon Strike	31.95
Drakkhen	36.95
Dungeon Master	24.95
East vs West Berlin	24.95
Elan Performer 2.0	87.95
Electric Thesaurus	28.95
Elvira	36.95
Empire	31.95
Excellence V2.0	109.95
F-19 Stealth Fighter	36.95
F-29 Retaliator	31.95
Faces...Tris III	24.95
Falcon	31.95
Fat Tracks	34.95
Federation	31.95
Fire and Forget II	28.95
Flight of the Intruder	34.95
Flight Simulator II	30.95
Full Metal Planet	30.95
Future Classics	30.95
Future Wars	30.95
Genghis Kahn	36.95
GFA Basic 3.5	87.95
Globulous	23.95
Gold Disk Office	166.95
Golden Axe	31.95
Gunboat	30.95
Gunship	34.95
Hardball II	30.95
Harley Davidson	31.95
Harmony	28.95
Harpoon	37.95
Heart of China	36.95
Heat Wave	28.95
Heros Quest	36.95
Highway Patrol II	28.95
Hillsfar	31.95
Hockey League Sim	21.95
Holyes Book/Games	21.95
Immortal	31.95
Imperium	25.95
Indiana Jones-Graph	20.95
Indianapolis 500	31.95
Invision +	174.95
Ishido	34.95
It Came from/ Desert	31.95
Jack Nicklaus Golf	30.95
Course #3 1990	15.95
Jack Nicklaus Unlim	36.95
Jones In / Fast Lane	24.94
Karafonts ea.	44.95
Katie's Farm	24.95
Keys To Maramonte	30.95
Keybd Cont Seq.3.0	159.95
Killing Game Show	28.95
King's Quest 1,2or3	30.95
King's Quest 4	36.95
King's Quest 5	36.95
Knight Force	28.95
Land, Air, Sea Comp	36.95
Lattice C	194.95
Legend of Faerghail	23.95
Leisure Suit Larry	24.95
Leisure St Larry 2or3	36.95
Life and Death	31.95
Loom	37.95
Loopz	31.95
Lost Patrol	31.95
M-1 Tank Platoon	36.95
M2 Amiga	147.95
M2 Amiga Debugger	77.95
Macro Paint	78.95
Magic Fly	25.95
Magic Johnson	31.95
Manhunter Ny or SF	30.95
Math Blaster Plus	30.95
Maverick	24.95
Maxiplan 3	147.95
McGee	24.95
Microace Black Jack	30.95
Microleague Football	24.95
Microleague Wrestl	24.95
Mid Winter	24.95
Might and Magic II	37.95
Mon Night Football	36.95
Monopoly	24.95
Monty Python	32.95
Movie Setter	41.95
Music Mouse	49.95
Music X	169.95
Music X Jr.	87.95
Nations at War	37.95
Neuromancer	28.95
New York Warriors	30.95
Night Breed	31.95
Night Force	28.95
Night Hunter	23.95
Night Shift	25.95
Nitro	28.95
Nobunga's Ambition	36.95
Nuclear War	30.95
Obitus	36.95
Off Road	30.95
On Line Platinum	41.95
Operation Combat	30.95
Operation Fire Fighter	19.95
Over Run	37.95
Page Renderer 3.0	94.95
Page Setter 2	74.95
Page Stream V2.0	184.95
Business Forms	24.95
Postscript Fonts	24.95
Dot Matrix Fonts	24.95
Pen Pal	84.95
Phasar 4.0	54.95
Photon Paint 2.0	87.95
Pictionary	24.95
Pirates!	28.95
Planet of Lust	24.95
Police Quest 1	30.95
Police Quest II	36.95
Pools of Radiance	31.95
Populous	31.95
Power Windows 2.5	54.95
Powermonger	31.95
Prince of Persia	24.95
Print Master Plus	24.95
Pro Tennis Tour	25.95
Pro Video Gold	139.95
Font Packs	59.95
Pro video Post	189.95
Pro Write 3.0	91.95
Professional Draw	112.95
Profes Page 1.2	CALL
Structured Clip Art	36.95
Templates	36.95
Project D+ Backup	30.95
Projectyle	25.95
Puffy's Saga	25.95
Puzzle Gallery II	31.95
Puzzle Story Book	25.95
Quarter Back	42.95
Quarter Back Tools	52.95
Raw Copy	34.95
Red Baron	36.95
Red Storm Rising	34.95
Rise of the Dragon	36.95
Risk	24.95
Robocop	28.95
Rocket Ranger/3 St	31.95
Romance/3 Kingdom	42.95
Sands of Fire	31.95
Saxon Publisher	244.95
Scene Generator	29.95
Scrabble	24.95
Scribble Platinum	57.95
Search for the King	36.95
Second Front	31.95
Sex Vixens-Out Sp	22.95
Sextimates	30.95
Shadow of the Beast	30.95
Shadow / Beast II	36.95
Shark Attack	24.95
Showmaker	214.95
Sim City	30.95
Terrian Editor	14.95
Space Ace	34.95
Space Quest 1 or 2	30.95
Space Quest 3	36.95
Spectracolor	CALL
Spellbound	24.95
Spirit of Excalibur	30.95
Spot	24.95
Star Fields	36.95
Star Flight	31.95
Sterling Service BBS	84.95
Storm Across Europe	37.95
Stunt Track Racer	24.95
Stratego	30.95
Strike Aces	30.95
Strip Poker 2	24.95
Superbase Personal	46.95
Superbase Person 2	87.95
Superbase Pro 3.0	189.95
Superbike Simulator	31.95
Superplan	87.95
T.V. Sports Basket	31.95
T.V. Sports Football	31.95
Teenage Ninja Turtle	28.95
Tennis Cup	24.95
Tetris	20.95
Terrain Envoy	28.95
Test Drive II	30.95
Data Disks ea.	15.95
Test Drive III	CALL
Their Finest Hour	37.95
Third Courier	30.95
Thexdar	21.95
Time Machine	34.95
Title Page	112.95
Transwrite	41.95
Treasure Trap	24.95
Trial By Fire	36.95
Tunnels of Armaged	25.95
Turbo Out Run	31.95
Turbo Silver 3.0	73.95
Turrican	24.95
TV Text	64.95
TV Text Professional	99.95
Universe 3	31.95
Unreal	31.95
Untouchables	25.95
Vette	30.95
Video Effects 3-D	113.95
Video Titler V1.5	92.95
Video Tools	182.95
VideoScape 3D V2.0	184.95
Viking Child	23.95
Vista	64.95
Viva	122.95
Voice Recognition	109.95
War of the Lance	25.95
Warhead	31.95
Waterloo	37.95
W Gretzky Hockey	30.95
Welltris	21.95
Wild Streets	28.95
William Tell	25.95
Wings	31.95
Wings of Fury	24.95
Wolf Pak	28.95
Wonderland	30.95
Works, Platinum	112.95
World Atlas	35.95
World Class Lderbrd	28.95
Wrath of the Demon	CALL
WShell	28.95
X Copy v2.9	34.95
X Copy Professional	47.95
Xenomorph	31.95
Xiphos	24.95
Zoetrope	44.95

VISA MasterCard

INFORMATION
414-357-8181 FAX 414-357-7814
P.O. BOX 17882 Milwaukee, WI 53217
HOURS-CST MON-FRI 9am-9pm•SAT 11am-5pm
NO CREDIT CARD SURCHARGE

CALL US TODAY!
AMIGA
Commodore
FOR ALL YOUR NEEDS

ORDERING INFO: Specify system. For fast delivery send cashier's check or money order. Personal & company checks allow 14 business days to clear. School P.O.'s welcome. C.O.D. charges are $4.00. In Continental U.S.A. include $4.00 for software orders 5% shipping for hardware, minimum $5.00. MasterCard and Visa orders please include card #, expiration date and signature. WI residents please include 5% sales tax. HI, AK, FPO, APO, Puerto Rico and Canadian orders, please add 6% shipping, minimum $6.00. All other foreign orders add 15% shipping, min $15.00. All orders shipped outside the Continental U.S.A. are shipped first class insured U.S. mail, where available. If foreign shipping charges exceed the minimum amount, you will be charged the additional amount. All goods are new and include factory warranty. We do not guarantee compatability & version #s. Due to our low prices all sales are final. All Defective returns must have a return authorization number. Call (414) 357-8181 to obtain an R.A. # or your return will not be accepted. Prices and availability subject to change without notice. Shipping & handling are non-refundable. We ship the latest versions available to us, updates must be handled by end user directly with the manufacturer. Not responsible for typographical errors.

Circle 148 on Reader Service card.

AMW 1-91

800-558-0003 ComputAbility Consumer Electronics 800-558-0003

Since 1982

ICD

FLICKER FREE VIDEO

Use a standard VGA or multi-sync monitor & get FF Video on AMIGA 500/1000/2000

$329

AD SPEED

Accelerator for All AMIGA Computers

- 14.3 & 7.16 MHz 100% Compatibility
- No-solder installation
- 32K Static RAM Caching

$235

AdRAM

2080 0K/8MB Board $129
505 0K Board for A500 ....$29
505 w/512K Board for A500 ....$59
540 0K/4MB Board for A500 ....$109
560DW w/2MB Daughter for 540 ....$119

AdSCSI 2000 & AdSCSI 2080

Hard Drive Packages - available below

GOLDENIMAGE®

Hand Scanner

w/Migraph Touch-Up

$265



MASTER 3A-1D

NEW

Disk Drive

w/LED Tracking Display

$125

MASTER 3A-1

Disk Drive

The Original!

$85

2 Meg Ram

for A2000

$189

RC500

512K Exp. RAM

$49

Mice

Opto-Mech $39
Fully Optical ...$59

SupraDrive 500 XP

Hard Disk System

500 XP 20 Meg w/512K ..$529
500 XP 20 Meg w/2 Meg.$559
500 XP 40 Meg w/512K ..$629
500 XP 40 Meg w/2 Meg.$659

SupraRam 2000

0 K..........$112
2 MB........$189 6 MB........$349
4 MB........$279 8 MB........$429

SupraModem 2400

AMIGA 500/2000 MODEM CABLE INCLUDED!

$105

VIDEO PACKAGE

•PANASONIC 1410 CAMERA•
•COPYSTAND W/ LIGHTS•
•DIGIVIEW GOLD 4.0•

PRICE INCLUDES:
16MM LENS W/ VARIABLE IRIS

NEW YEAR PRICE

$379

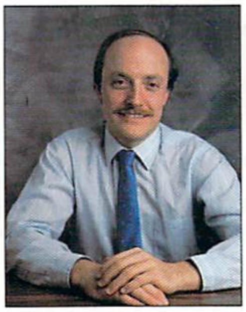
ASK US ABOUT OUR TRUMPCARD 500 HOLIDAY SPECIAL

PRICED RIGHT FOR THE HOLIDAYS!

VIDEO TOASTER & DC TV AVAILABLE NOW!

AMIGA 500/2000 HARD DRIVE PACKAGES

DRIVES	DRIVE ALONE	TRUMPCARD 2000	TRUMPCARD PRO 2000	SUPRA WORD-SYNC 2000	AdSCSI 2000	AdSCSI 2080 w/ 0K/8MB Exp.	TRUMPCARD 500	TRUMPCARD PRO 500
ST 138N-1 30MB/28 MS	$245	$369	$449	$359	$349	$419	$439	$499
ST 157N-1 49MB/28MS	$279	$399	$469	$389	$379	$449	$479	$539
ST 177N 60MB/20MS	$339	$449	$529	$439	$429	$499	$519	$589
ST 277N-1 60MB/28MS	$309	$429	$499	$419	$409	$479	---	----
ST 296N 80MB/28MS	$329	$449	$519	$439	$429	$499	---	----
ST 1096N 80MB/20MS	$359	$479	$549	$469	$459	$529	$539	$609
Quantum 40MB	$325	$439	$515	$429	$419	$489	$499	$579
Quantum 80MB	$499	$599	$689	$589	$579	$649	$699	$759
Quantum 105MB	$539	$659	$729	$649	$639	$709	$739	$799
Quantum 170MB	$849	$959	$1039	$949	$939	$999	$1039	$1099
Quantum 210MB	$989	$1099	$1149	$1089	$1079	$1139	$1149	$1229

THE  PD PROSPECTOR

Discover what's hot on the nets this month.

Compiled by Tim Walsh

As winter really digs in, the Prospector is scanning the telecommunications networks, seeking to bring you a constant variety of download selections. As always, file numbers and library locations are listed for quick reference.

People/Link

JRC101.LZH (AmigaZone Section 8, File# 24972) The popular JR-Comm telecommunications program, upgraded to version 1.01. Offers Workbench 2.0 compatibility.

LHARCA99D.LZH (AmigaZone Section 4, File #24943) LharcA99D, a point and click interface for the Lharc archiving program. Also permits selective extraction of a particular file within a compressed file.

MACHIII.LZH (AmigaZone Section 4, File #24854) MachIII and SetMach combo. Provides mouse speed-up and hot keys.

WONDERSOUND1.5.LZH (AmigaZone Section 7, File #24804) Version 1.5 of WonderSound. Creates all manner of strange and unusual IFF sound files.

Kudos to Plink's Amiga section Chairman Harv Laser for uploading files #24980 and #24981 to Section 5. These 4-in-1 HAM pictures include *AmigaWorld* editors at the October 1990 AmiExpo.

CompuServe

JOY.LZH (AmigaTech, Library 1) Control your Amiga with a joystick plugged into port 2. Handy if the mouse dies or its port goes belly-up.

TEXTCA.LZH (AmigaUser, Library 7) An editor that performs math functions on two or more numbers in a document.

FIND.ZOO (AmigaUser, Library 9) Quickly locates files on a hard disk. Operates with Workbench 2.0.

RECOVE.LZH (AmigaUser, Library 9) Recover II disk-salvage program with an Intuition interface. Reads a device and lists deleted but recoverable files.

CompuServe Assistant Sysop Betty Clay says the network is alive with the sound of A64DIS.LZH, found in Library 15. It's a Commodore 64 emulator that runs most C-64 software. Send the author $25 for a cable that lets you attach a 1541/71/81 to the Amiga and use it with the emulator.

GEnie

RUNIT!11.LZH (Library 4, File #9356) Intuition-based interface that executes double-clicked program files. Shareware, but only one dollar!

DIRWORKS_V1.12.Z00 (Library 4, File #9345) Version 1.12 of DirWorks, a handy file-maintenance utility. Shareware, $20.00.

DU.LZH (Library 4, File #9344) Version 1.4 of du. A tiny (1640 bytes) disk utility that displays the disk usage of files and directories.

ICONIZE_V090.LZH (Library 13, File #9337) Converts IFF images into gray-scale icons for your Workbench screen. Can be used with either Workbench 2.0 or 1.3.

All of the fine GEnie files listed above notwithstanding, RRAM.LZH (Library 11, file #9330) has the highest number of downloads of any GEnie file recently. It's a 6300-byte file that creates up to 32 recoverable RAM disks at once!

Prospector's Perch: Disk utilities and keeping up with the (Dow) Joneses

After examining the above listings of top picks from the networks, it's clear that short, useful disk utilities are gaining in popularity. Attribute it to the increase in hard disk-equipped Amiga systems, the recessive economy, or a combination of elements, but something is keeping programmers at home writing decent code.

If you're uncertain of whether or not you want to establish an account on a network or two, there are some rarely mentioned advantages. Downloading utilities and applications is fine, but networks also serve as invaluable sources of up-to-the-minute news. While a five-dollar transistor AM radio does the same, networks such as CompuServe and GEnie provide up-to-the-hour NYSE prices. If you're worried about Wall Street fluctuations and can withstand about eight anxiety attacks per day, get one of these accounts. Besides a modem, all your computer needs is a telecommunications package, such as the top-notch JR-Comm program listed above.

As always, bear in mind that few files listed under one network can't be found on the others. Sure, there are exceptions to every rule, but, given time, nearly all the freely distributable files make the rounds to all of the nets. For example, IIZE09.LZH, found on CompuServe, is the same program as ICONIZE_V090.LZH, listed above under GEnie.

If all else fails, and a specific file can't be found on your network, check out the public-domain disk collections advertised throughout *AmigaWorld*. Another quick remedy is to contact your local Amiga dealer for other sources of freely distributable software.

If you're interested in establishing an account on any of the above networks, here are the voice numbers to call to get under way:

American People/Link: 800/524-0100
CompuServe: 800/848-8199
614/457-8650 from within Ohio
GEnie: 800/638-9636

Use QUARTERBACK to save your Data.

Use QUARTERBACK TOOLS to save your A**!



Have you ever deleted the wrong file (or worse yet, ALL your files) with a slip of the finger?

Have you seen this awful message: "Error validating DHO"?

Then you need **QUARTERBACK TOOLS**, the ***fastest*** and ***easiest*** way to recover your lost files on any AmigaDOS volume.

QUARTERBACK TOOLS also optimizes the speed and reliability of your Amiga hard disks and floppy disks by:

- Repositioning your files to optimum locations on the disk, eliminating file fragmentation, and consolidating disk free space.
- Searching the entire disk for errors and marking bad areas "out of service."
- Curing validation problems; finding and fixing corrupted directories.

QUARTERBACK TOOLS runs on any Amiga using either the old or new filing systems, and runs with new and old Workbench versions.

QUARTERBACK TOOLS*... now* ***this*** *is no donkey!*

And to close the barn door ***before*** the horse escapes, use **QUARTERBACK** the ***fastest*** and ***easiest*** hard disk backup program for the Amiga.

Other useful products from Central Coast Software:

Mac-2-Dos for transferring Macintosh files to and from the Amiga.

Dos-2-Dos for transferring MS-DOS/Atari files to and from the Amiga.

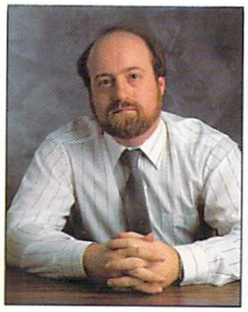
CCS

Central Coast Software • 424 Vista Avenue, Golden, Colorado 80401
(303) 526-1030 • Fax (303) 526-0520

MasterCard

Dealer Inquiries Welcome

VISA



HELP KEY

Just when you are attaching the chain to turn your Amiga into a boat anchor, along comes Lou.

By Louis R. Wallace

X Lost the Spot

Q: *Help! I just had a weird thing happen to me using Workbench 1.3. I started with a drawer (call it drawer X) that contained another drawer (call it Y). I opened drawer X, and its window showed that drawer Y was inside. Next, I opened drawer Y. I closed drawer X and then dragged drawer X inside of drawer Y. Finally, I closed drawer Y, and both drawers disappeared! They never show up anymore on my directory. They never even write or call. What happened?*

M. Joiner
Sebastopol, CA

A: Well, you have encountered a rather obscure bug in AmigaDOS. I tried what you described, and both of my directories also went off to never-never land. I called Commodore's technical department, and the representative I spoke to confirmed that they are already aware of this bug.

If you lost important data in those directories, the only advice I can give you is to use a program such as DiskSalv (a PD file/disk recovery program) to try to restore your files. However, if you have written to the disk that the directories were on, the data may already have been damaged or destroyed. Oh yes, one more tiny bit of advice: I suggest you don't try such drawer gymnastics anymore!

DOC Squawk

Q: *I just bought a Trumpcard 500 and an ST138N hard disk in order to store all the programs I have in one place and to solve my floppy overload problem. The combination seems to be working just fine, and, as an artist, I love being able to load DeluxePaint III in two seconds. I am not a hacker, however, and have only a minimal amount of knowledge of the CLI, so I prefer to handle CLI functions with such programs as Click-Dos, Browser, and UtiliMaster because they are faster and easier for me than learning the CLI.*

The problem I am having is with the .DOC files for some of my programs. When I booted with a floppy, they would run and display their information just fine when clicked. Now, however, many of them either flash a 205 error or ask me to insert a certain disk. What did I do wrong when I installed my hard disk? Do I need some kind of assign or something for the .DOC files?

R. Corcoran
Wauconda, WA

A: I suspect the problem lies in the command and path that are named in the Default Tool field of the icon. To find out, click on the icon once. Then, from the Workbench menu select Info. This will display a screen with a number of facts about the icon, including which (if any) default tool is to be used.

The chances are quite good that the icon is using a default tool such as MORE (or another text file reader/display program), and may even specify the volume name of the program's original disk. If this is the case, you can edit the default tool to direct it to your own AmigaDOS C: or Utilities: directories. Depending on where you keep MORE (I moved mine into the C: directory, while other users keep it in the Utilities: directory), edit the information in the Default Tool field to contain:

```
SYS:C/MORE
```

or

```
SYS:UTILITIES/MORE
```

Finally, click on the Save gadget. The next time you click on the icon for the documentation file, it will be able to find the proper file-reading program.

Stop the Swap

Q: *I have an A2000, and I use the word processor excellence! Every time I try to save a file to my formatted data disk, the computer asks me to reinsert the program disk (excellence!) and ends up saving the file to that disk instead of my blank data disk! What's wrong?*

P. Gong
Kerman, CA

A: From the scenario you describe, I have to guess that you are working on a computer with only one floppy drive. If that is the case, you can do a couple of things to make excellence! save files as you wish.

If you have enough memory, you can create a RAM disk and modify your excellence! disk's startup-sequence to copy the program to RAM:; then run it from there. The easier choice, however, would probably be to merely enter a filename in the Save File Requester that includes a path to your data disk. For example, if you formatted your data disk with the name Data, you could tell excellence! to save your file, MyDataFile, to the destination disk, Data. As in:

```
Data:MyDataFile
```

When you try to save with the above name, you will get a message instructing you to insert the disk named Data. Swap disks, and the save should proceed smoothly.

The best, but most expensive, solution to your problem is to buy a second floppy drive. You will find this makes using nearly every productivity program (and quite a few games) a lot easier. ■

AMIGAMAN



- LOW PRICES
- FAST SERVICE
- KNOWLEDGABLE OPERATORS
- FREE SHIPPING On orders over $100

FREE SHIPPING on orders over $100

Orders Only (800) 262-0533

9AM to 8PM EST M-F, Sat 10AM to 5PM

Entertainment

A-10 Tank Killer	$31
Altered Destiny	$37
Anarchy	$25
Amour-Gedden	$28
Arachnophobia	$28
Awesome	$37
B.A.T.	$34
Bar Games	$28
Battle Chess 2	$31
Battle Squadron	$25
Buck Rogers	$34
Carthage	$28
Colony	$34

Curse of the Azure Bonds NEW $34

David Wolf: Secret Agent	$31
Days of Thunder	$34
Day of the Viper	$31
Dick Tracy	$28
Dino Wars	$25
Double Dribble	$28
Dragon Lord	$34
Dragon Strike	$35
Dragon Wars	$31
Dragon's Lair 2	$43
Drakkhen	$37
Duck Tales	$28
Dungeon Master 2	$25
Elvira: Mistress of the Dark	$37
F-29 Retaliator	$34
Faces: Tris 3	$25
Falcon	$31
Falcon Mission 2: Op. Fire.	$19
Flight of the Intruder	$37
Full Metal Planet	$31
Globulus	$19
Gunboat	$31

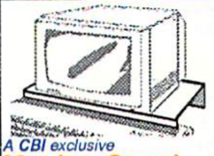
Harpoon NEW $37

Immortal	$34
Indy 500	$34

J. Nicklaus Unltd. Golf NEW $37

Killing Game Show	$28
King's Quest 4	$37
Legend of Faerghail	$25
Loom	$43
M1 Tank Platoon	$37
Matrix Marauders	$25
Midwinter	$25

Monday Night Football NEW $31



A CBI exclusive
Monitor Stand
Designed for the A500 of tough clear Lexan
Only $29

All the latest titles in stock
Call for those not listed

Entertainment

Monopoly	$25
Night Breed	$28
Night Hunter	$24
Nitro	$28
Nobunaga's Amition	$37
Nuclear War	$34
Obitus	$37
Persian Gulf Inferno	$25
Pirates	$28
Pool of Radiance	$34
Populous	$34
Power Pinball	$25

PowerMonger NEW $34

Prince of Persia	$25
Search for the King	$37
Second Front	$35
Secret of Monkey Island	Call
Shadow of the Beast 2	$37
Sim City	$31
Sim City Terrain Editor	$12
Sorcerian	$37
Spirit of Excalibur	$31
Spot	$25
Storm Across Europe	$43
Sword of Aragon	$34
Teenage Mutant Ninja Turtles	$28
Tetris	$22
Their Finest Hour	$43
Treasure Trap	$25
Turrican	$25
Vette	$31
Viking Child	$25
Wings	$35
Wizard Wars	$28

Education

Barney Bear Goes to Farm	$22
Barney Bear Goes to School	$22
Barney Bear Goes to Space	$22
Carmen Sandiego Europe	$31
Carmen Sandiego Time	$31
Carmen Sandiego USA	$31
Carmen Sandiego World	$31
Distant Suns	$44
Katie's Farm	$25
Math Blaster Plus	$31
McGee	$25
Talking Animator	$41
Talking Coloring Book	$19

Music

MUSIC SOFTWARE

Bars and Pipes	$171
Delx Music Const. Set	$72
Dr. T's Copyist Pro	$172
Dr. T's K C.S. Level II	$219

Dr. T's Tiger Cub SPECIAL $56

MUSIC HARDWARE

ECE Midi	$49
Midi Gold 500	$56
Midi Gold Insider	$65
Phantom SMPTE MIDI	Call

Complete Automatic
Digi-View Bundle
Digi-View 4.0, Copy Stand, Panasonic 1410 camera w/lens, Autodroid, video switch, and all cables.
$449

All the latest titles in stock
Call for those not listed

Productivity

Advantage	$119
B-Graph	$122
Excellence 2.0	$125
Kindwords 2.0	$62

Page Stream 2.0 New $185

Pen Pal	$86

Prof. Page 2.0 New $249

PPage Outline fonts	$125

Prowrite 3.0 SPECIAL $89

Saxon Publisher	$225
Service Industry Acct.	$245
SuperBase Personal	$50
SuperBase Pro	$199
Top Form 2	$56
WordPerfect	$156

Utility

CliMate	$25
Dr. Ami	$31
Dunlap Utilities	$49
Project D	$31
Quarterback	$44
Quarterback Tools	$55

Video Tapes

Getting Started With Amiga	$24
Video Grphc Tchnique	$34
Color Cycling Anim	$34
Digitizing for Effect	$34
Guide to Amiga HrdDrv	$42
Ultimate Amiga Guide to Video Production I	$34
Ultimate Amiga Guide to Video Production II	$34
The World of Turbo Silver	$24
Pro Techniques w/DPaint III	$24



ICD ADRAM
0K RAM $115
1MB - $169 2MB - $219

All the latest titles in stock
Call for those not listed

Graphic Arts

GRAPHICS SOFTWARE

Art Department	$56
Deluxe Paint III	$94
Digi-Paint 3	$62
Digi-View Gold 4.0	$129
HomeBuilder's CAD	$125

Imagine NEW $196

IntroCad Plus	$94
Professional Draw 2.0	$125
Sculpt-Animate 4D	$399
Sculpt-Animate 4D Jr.	$99

Turbo Silver 3.0 NEW LOW PRICE $69

GRAPHICS HARDWARE

AutoDroid	$46
Color Splitter	$112
Copy Stand	$62

Dakota Tablet
12" x12" $399
12" x18" $629

DigiDroid	$67
Flicker Fixer	$399
Flicker Fixer's DEB 2000	$99
Frame Grabber	$649
Pan.1410 Cam.w/lens	$199
Summa Grphcs II Tablet	$499

Flicker Free Video
Bundle - VGA Monitor with Video Display Enhancer Card
Price Breakthrough $649

BaseBoard
0K RAM $115
1MB - $169 2MB - $219

All the latest titles in stock
Call for those not listed

Video

VIDEO SOFTWARE

3D Professional	$295

AmigaVision NEW after mfg. rebate $74

Broadcast Titler 2	$239
Deluxe Video III	$99
Director	$44

Disney Anim. Studio Special $99

Photon Video EDLP	$312
Pro Fills	$19
Pro Video Gold	$149
Pro Video Post	$209

Showmaker New $247

TV Graphics	$31
TV Show V2	$62
TV Text Pro	$99
Title Page	$124
Video Tools	$187
Vista	$62

VIDEO HARDWARE

DCTV	$429
Magni w/ controller	$1599
MiniGen	$209
ProGen	$349
Supergen	$649
Supergen 2000S	Call

Video Toaster New Call

Hardware (misc)

A2000 Internal Drive	$94
AMAX 2 Package	$449
Mega Midget Racer 25Mhz	$699
PC Power Board 500	$499
Perfect Sound 500 3.1	$69
Boing Optical Mouse	$94
Cordless Mouse	$89
Mouse Master Switch	$29
JX100 Scanner w/Software	$749
JX300 Scanner w/Software	$2999
BatHandle Joystick	$25
Boss Joystick	$15
Slik Stik Joystick	$7
Tac 50 Joystick	$17
Amtrac Trackball	$71
Kraft Trackball	$59
Bulk 3.5 disks(100)	$69

GOLDEN IMAGE

OptoMech. Mouse	$37
Optical Mouse	$59
Hand Scanner w/Touchup	$299
Master 3A-1 Floppy Drive	$95
Master 3A-1D Floppy Drive	$139
RC500 512K RAM exp.	$52
RC2000 2MB RAM exp.	$199

AMIGA 500 EXPANSION SET
512K RAM Exp. w/Clock & 880K External Drive
Combo Price $145

All the latest titles in stock
Call for those not listed

Hardware

Applied Engineering

A500

Ram Works 500	$69
HD Powersupply	$86

A2000

Ramworks2000 0K	$112
Ramworks2000 512K	$137
Ramworks 2000 1mb	$159
Ramworks 2000 2mb	$209

Modems

DataLink Express ext.	$169
DataLink Exp. MNP-5	$199
DataLink Exp. SendFAX	$229
DataLink 2000 int.	$139

AE 3.5" Drives
880k external $99
1.52MB external $199

GVP

A2000 Harddrives

HC8+0/0 Series II	$219
HC8+0/40Q Series II	$599
HC8+0/80ST Series II	$679
HC8+0/100Q Series II	$939

A2000 Accelerators

A3001-4MB/0	$1629
A3001-4MB/40Q	$1999
A3001-4MB/80Q	$2299
A3033-4MB/0	$1999
A3033-4MB/40Q	$2299
A3033-4MB/80Q	$2449
A3050-4MB/80Q	$3299

A500 Harddrives NEW

A500-HD8 +0/40	$659
A500-HD8 +0/52Q	$779
A500-HD8 +0/100Q	Call

Removable Media

50MB Ricoh HD ext.	$1029
WT150 Tape ext.	$699

Network controllers

for A500	$686
for A2000	$623

Supra Corporation

SupraDrives

880K Ext. 3.5 floppy	$99
20MB-A500XP NEW	$549
40MB-A500XP NEW	$699
105MB-A500XP NEW	$969
Wordsync controller	$119
40MB-A2000(Qtm)	$489
80MB-A2000(Qtm)	$719
105MB-A2000(Qtm)	$789

SupraRam

500(512K w/clock)	$62
500RX(512K to 8MB)	Call
SupraRam2000 2mb	$209
SupraRam2000 4mb	$309
SupraRam2000 8mb	$509

AMIGA 2000 Supra EXPANSION SET
2 MB RAM Exp & 40 MB QuantumHD
Combo Price $599
after manuf. rebate
$50 Supra Rebate 'til Dec.31, 1990

Supra Modem 2400
W/Software and cable
Special $149

All the latest titles in stock
Call for those not listed

Free Shipping on Orders Over $100 in contiguous 48 states
$3.00 per order charged for orders under $100. No surcharge for Visa, Mastercard. COD charge $3.30, (established customers only) 15% restocking fee for all returns unless exchanged for same item.Any returns must be marked with RA# issued you by our Customer Service Dept. Shipping & handling is not refundable, and is the responsibility of the purchaser.

Computer Basics Inc.

No One Knows Amiga Better
Authorized Commodore Dealer Since 1980

1490 N. Hermitage Rd., Hermitage, PA 16148 Customer Service (412) 962-0533
9 - 8 M - F (West Coast customers call up to 5PM PST) , 10- 5 Sat
Walk-ins welcome, worth the drive from Pittsburgh, Erie, or Cleveland.

1-800-262-0533 Orders only

24 Hour Fax line (412) 962-0279

Circle 253 on Reader Service card.

established 1967

MONTGOMERY

RETAIL OUTLET: Penn Station, Main Concourse (Beneath Madison Square Garden) New York City, NY 10001

STORE HOURS: Mon-Wed 9:00am-7pm Thurs 9-8 Fri 9-2:30 CLOSED Saturday Sunday, 9:30-7

FOR CUSTOMER SERVICE CALL:
(718) 692-1148
Mon-Thurs, 9:00AM-5PM
Friday, 9:00AM-3PM

24 HOUR FAX #: 718-692-3372 TELEX: 422132MGRANT

NO SURCHARGE FOR CREDIT CARD ORDERS. RUSH SERVICE AVAILABLE. LIFETIME TOLL-FREE TECHNICAL SUPPORT.

AMIGA 500 & AMIGA 2000 HARD DRIVE PACKAGES

WE WILL NOT BE UNDERSOLD ON ANY OF THESE HARD DRIVE PACKAGES

INCLUDES CABLES & SOFTWARE — SCSI CONTROLLERS

SEAGATE DRIVE	DRIVE PRICE	XETEC MINI FASTCARD (A2000) $89	SUPRA WORD-SYNC A-2000 $105	TRUMP CARD 2000 $135	GVP Series II HC A-2000 $155	GVP Series II HC8/0 A-2000 $205	XETEC FASTCARD Plus A2000 (exp. to 8MB) $175	TRUMP CARD 2000 Professional $204	TRUMP CARD A500 (exp. to 2MB) $219	TRUMP CARD 500 Professional $269	XETEC FAST TRAK A500/A1000 (exp. to 4MB) $299
ST-125N-1 (20MB,28MS)	$219	$299	$320	$335	$369	$419	$389	$409	$399	$459	$514
ST-138N-1 (30MB, 28MS)	$239	$324	$339	$355	$389	$439	$409	$429	$419	$479	$535
ST-157N-1 (49MB,28MS)	$269	$354	$369	$379	$419	$469	$439	$449	$459	$519	$563
ST-177N (60MB, 3.5")	$329	$409	$419	$429	$479	$529	$499	$509	$499	$569	$625
ST277N-1 (60MB, 5.25")	$299	$369	$399	$409	$449	$499	$469	$479	—	—	—
ST-296N (80MB)	$319	$399	$429	$429	$469	$519	$489	$499	—	—	—
ST-1096N (80MB,3.5")	$349	$429	$449	$459	$499	$549	$519	$529	$519	$589	$645
QUANTUM (40MB)	$319	$399	$409	$419	$469	$519	$479	$499	$479	$559	$609
QUANTUM (80MB)	$489	$559	$569	$579	$639	$689	$659	$669	$679	$739	$779
QUANTUM (105MB)	$529	$609	$619	$639	$679	$729	$699	$709	$719	$779	$819
QUANTUM (120MB)	$659	$739	$749	$769	$809	$859	$729	$839	$849	$909	$949
QUANTUM (170MB)	$819	$899	$919	$929	$959	$999	$984	$999	$999	$1059	$1089
QUANTUM (210MB)	$949	$1019	$1049	$1069	$1079	$1129	$1089	$1119	$1119	$1189	$1219

HARD DRIVE CARD PACKAGES AVAILABLE - CALL

GVP

28Mhz. 68030 Acellerator for A-2000..........$649
GVP 3001 Kit (28 MHz) w/68030, 2MB+ 68882..........$1189
GVP 3001 Kit (28Mhz.) w/68030, 4MB, 68882..........$1379
GVP 3001 Kit (4MB) w/Quantum 40MB..........$1729
GVP 3001 Kit (4MB) w/Quantum 80MB..........$1879
GVP 3001 Kit (4MB) w/Maxtor 200MB..........$2399

GVP 3033 Kit (33 MHz.) w/68030, 4MB, 68882..........$1529
GVP 3033 Kit w/Quantum 40MB..........$1869
GVP 3033 Kit w/Quantum 80MB..........$2069
GVP 3033 Kit w/Maxtor 200MB..........$2629

GVP 3050 Kit (50Mhz.) w/68030, 4MB, 68882..........$2379
GVP 3050 Kit w/Quantum 40MB..........$2679
GVP 3050 Kit w/Quantum 80MB..........$2899
GVP 3050 Kit w/Maxtor 200MB..........$3369

We can re-configure all GVP accelerator kits with any size hard drive..........CALL



WE WILL NOT BE UNDERSOLD ON ANY GVP PRODUCT!!

GVP A-500 HD 8+0/30MB..........$539
GVP A-500 HD 8+0/45MB..........$579
GVP A-500 HD 8+0/52MB Quantum..........$719
GVP A-500 HD 8+0/105MB Quantum..........$899

Supra 500XP HARD DRIVES



512K RAM Expandable to 8MB
512K, 20MB..........$525
512K, 40MB..........$625
512K, 105MB..........$859

2MB THRU 8MB VERSIONS AVAILABLE

NEW SUPRA RAM 500RX

Thin, Compact, Fits into your Bus Port of A-500, but allows other peripherals to be connected thru the Bus. *512K Expandable to 8MB*



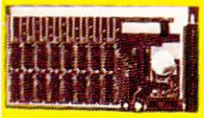
Supra RAM 2000

- 2, 4, 6, & 8MB configurations available
- Easy to add memory
- Works on all Amiga® 2000 computers
- Reliable Four-Layer Board with Zero Wait States & Hidden Refresh
- Installs easily in any Amiga internal expansion slot
- Made in USA

0K..........$108
2MB..........$184
4MB..........$269
6MB..........$339
8MB..........$419

RAM 500

512K EXPANSION for A-500



SUPRA 3.5" EXTERNAL DRIVE

SUPRA WORDSYNC SCSI INTERFACE

Supra 44R Internal Tape w/SCSI..........$679
Supra 44R External Tape/no SCSI..........$769
SUPRA MODEM 2400 EXTERNAL w/CABLE..........$105
SUPRA MODEM 2400 ZI INTERNAL..........$114

NO NONSENSE - NO GIMMICKS - NO PETTY DISCOUNTS ON OVER- INFLATED PRICES! JUST THE EVERYDAY LOWEST PRICING, LIFETIME TOLL FREE TECHNICAL SUPPORT AND EXPERIENCED, COURTEOUS SERVICE! ALL YOU•VE GROWN TO EXPECT FROM MONTGOMERY GRANT!

TRADE-IN YOUR USED COMMODORE OR AMIGA EQUIPMENT FOR A NEW, BETTER MODEL - CALL FOR DETAILS!

Certified check, bank check, money orders, approved P.O.'s, Visa, Mastercard, Diner's Club, Am-Ex, Optima, Cart Blanche, C.O.D.'s & wire transfers accepted. Please call before submitting P.O. No additional surcharge for credit card orders. Non-certified checks must wait 4-6 weeks for clearance. Prices and availability subject to change without notice. Not responsible for typogra Return of defective merchandise must have prior return authorization number, or returns will not be accepted. Please add 5% shipping & handling (min. $6). Orders over $1200 are discounted to shipping & handling. Orders over $3000 are discounted to 2% (Canadian orders please call for shipping rates). Second Day & Next Day Air available with extra charges. APO/FPO orders please a 10% shipping & handling (over $1200-8%, over $3000-6%). All APO/FPO orders are shipped first class priority air. All orders can be shipped Air Express-call for details. D.C.A. #800233.

MasterCard VISA AMERICAN EXPRESS

GRANT

EXTENDED HOLIDAY SEASON ORDER HOURS:
Mon-Thurs 8:30am-8pm/Fri 8:30am-2:30pm/
Sun 9:30-7/Closed Saturday
(ET)



FOR ORDERS & INFORMATION IN USA AND CANADA CALL TOLL FREE

1-800-759-6565

OUTSIDE USA & CANADA CALL **718-692-0790**

OR WRITE TO: MONTGOMERY GRANT MAIL ORDER DEPARTMENT P.O.BOX 58 BROOKLYN, N.Y., 11230



PROGRESSIVE PERIPHERALS & SOFTWARE

FRAME GRABBER $519



- FRAMEGRABBER 256....$569
- **512K Expansion for A-500....$57**
- MINIGEN....$185
- PROGEN....$339
- QICTAPE 60MB External Tape....$449
- EXP-1000 1MB Upgrade for A-500....$129
- FRAMEGRABBER 2.0 Software....$75
- BAUD BANDIT 2400 External Modem....$99
- BAUD BANDIT 2400 Level 5....$127

AMIGA COMPATIBLE PERIPHERALS & ACCESSORIES

- AIR DRIVE Internal Drive for A-3000....$85
- AMIGA 1000 Memory & Accessories....AVAILABLE
- AMIGA 3000 32 Bit Memory..IN STOCK
- AMIGA Appetizer Software (Word Process, Music, Paint, Game, Tutorial Program)....$39
- AM!GAVISION Software....$59
- AMIGA 1.3 ROM (8850)....$39
- AMIGA 1MB Fatter Agnus Chip (8372A)....$94
- AMIGA 500 Power Supply....$66
- AMIGA 2000 Power Supply (w/Trade-in)....$99
- A-MAX Mac Emulator for Amiga....$109
- A-MAX Emulator 2....$134
- A-MAX ROM....$149
- CUTTING EDGE Mac Compatible Drive for A-MAX....$149
- AMIG-A-TOSH PLUS....$239
- APPLIED ENGINEERING 1.52MB Hi-Density Drive....$189

BASEBOARD
Memory Expansion for A-500
(uses A-501 Expansion Slot

OK	$99	2MB	$199
512K	$129	3MB	$269
1MB	$149	4MB	$329

- CHINON Internal Drive for A-2000...$69
- COLOR SPLITTER....$109
- COMPUTER EYES PRO DIGITIZER (VGA)....$329
- FLICKER FIXER....$355



CALIFORNIA ACCESS
(Bodega Bay) Expansion Console - Turn your AMIGA 500 into a A-2000 Compatible....$299

- **CALIFORNIA ACCESS CA-880 3.5" DISK DRIVE....$95**
- DIGIFEX 16Mhz. Acellerator Board for A-500 & A-2000....$199
- DENISE Extender for FLICKER FIXER....$119
- DIGITAL CREATIONS DCTV DC-10....$389
- FLY HAND SCANNER....$189

GENLOCKS

- AMIGEN...$89
- MINIGEN...$185
- OMNIGEN 701....$1599
- SUPER GEN....$599
- SUPER GEN 2000S....$1339
- MAGNI 4004 or 4004S w/Controller....$1449
- NERIKI GENLOCK....$1469
- NERIKI DESKTOP....$879
- VIDTECH SCANLOCK....$729
- PRO GEN....$339
- VIDTECH VIDEOMASTER.....CALL

ICD AD-RAM 2080
(Memory Expansion for A-2000)

OK....$139	4MB....$339	8MB..$529
2MB..$229	6MB...$419	

MICROBOTICS
Memory Upgrades for A-2000

8up OK....$129	8up w/6MB.CALL
8up w/2MB.$229	8up w/8MB.CALL
8up w/4MB.$349	

- MASTER 3A-1 3.5" Disk Drive....$88
- MASTER 3A-1D....$129
- MEGA-MIDGET RACER (25Mhz).$689
- PANASONIC 1410 w/Lens....$199
- PERFECTVISION Digitizer....$199
- PULSAR A-500 PC EMULATOR BOARD....$498

REJUVENATOR 1000
Turn your Amiga 1000 into a A-2000 compatible

- SHARP JX 100 Color Scanner w/Software & Cables....$689
- SHARP JX 300....$1689
- SHARP JX 450/730....CALL
- SHARP 9600 Baud Ext. Modem...$339

XETEC CD ROM

- *CDX-650E EXTERNAL....$689*
- *CDX-650I INTERNAL....$589*

commodore
1084 RGB MONITOR $279

AMIGA

AMIGA 500
AMIGA 2000
AMIGA 2000HD
AMIGA 2500/30
AMIGA 3000

PRICES SO LOW WE ARE NOT PERMITTED TO PRINT THEM

ALL AMIGA PERIPHERALS & ACCESSORIES IN STOCK

Holiday Printer Specials

HEWLETT PACKARD

- HP DESKJET 500....$529.95
- HP LASERJET IIP w/Toner....$969.95
- HP PAINTJET....$929.95
- HP LASERJET III w/Toner....$1639
- HP PAINTJET XL w/Toner....$1849

STAR

- NX-1000II....$139.95
- NX-1000 RAINBOW....$184.95
- NX-1001....$159.95
- NX-1020R....$219.95
- NX-2420....$299.95
- NX-2420R....$339.95



- NEC MULTISYNC IIID MONITOR....$649
- BROTHER HR-5 80 Col. Thermal Printer.$39

ALL OTHER MODELS IN STOCK! ALL MODELS DISCOUNTED!

PANASONIC

- KXP-1180....$149.95
- KXP-1191....$219.95
- KXP-1124....$289.95
- KXP-1624....$329.95
- KXP-4420 Laser....$879.95

EPSON

- LX-810....$189.95
- FX-850....$334.95
- LQ-510....$279.95
- EPL-8000 Laser....$879.95

CITIZEN

- GSX-140....$284.95
- 200GX....$179.95
- Color Option Kits....CALL

CANON

- BJ-130E....$599.95

AmigaWorld is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes over 130 computer publications in more than 40 countries. Nineteen million people read one or more of International Data Group's publications each month. International Data Group's publications include: ARGENTINA's *Computerworld Argentina*; ASIA's *Asian Computerworld*; AUSTRALIA's *Computerworld Australia, PC World, Macworld*; AUSTRIA's *Computerwelt Oesterreich*; BRAZIL's *DataNews, PC Mundo*; CANADA's *Computer Data*; CHILE's *Informatica, Computacion Personal*; COLUMBIA's *Computerworld Columbia*; DENMARK's *CAD/CAM WORLD, Computerworld Danmark, PC World, Macworld, Unix World*; FINLAND's *Mikro PC, Tietoviikko*; FRANCE's *Le Monde Informatique, Distributique, InfoPC, Telecoms International*; HUNGARY's *Computerworld SZT, Mikrovilag*; INDIA's *Computers & Communications*; ISRAEL's *People & Computers*; ITALY's *Computerworld Italia, PC World Italia*; JAPAN's *Computerworld Japan, Infoworld, Publish*; KOREA's *Hi-Tech Information/Computerworld*; MEXICO's *Computerworld Mexico, PC Journal*; THE NETHERLANDS' *Computerworld Netherlands, PC World, AmigaWorld*; NEW ZEALAND's *Computerworld New Zealand, PC World New Zealand*; NIGERIA's *PC World Africa*; NORWAY's *Computerworld Norge, PC World Norge CAD/CAM, Macworld Norge*; PEOPLE'S REPUBLIC OF CHINA's *China Computerworld, China Computerworld Monthly*; POLAND's *Computers*; SPAIN's *CIM World*; *Communicaciones World, Computerworld Espana, PC World, AmigaWorld*; SWEDEN's *ComputerSweden, Mikrodatorn, PC/Nyhetherna, PC World, Macworld*; SWITZERLAND's *Computerworld Schweiz*; TAIWAN's *Computerworld Taiwan, PC World*; UNITED KINGDOM's *Graduate Computerworld, PC Business World, ICL Today, Lotus UK, Macworld U.K.*; UNITED STATES' *AmigaWorld, CIO, Computerworld, Digital News, Federal Computer Week, GamePro, inCider, InfoWorld, International Custom Publishing, MacWorld, Network World, PC Games, PC World, Portable Computing, PC Resource, Publish!, RUN, SunTech Journal*; USSR's *World USSR, Manager, PC Express, Network*; VENEZUELA's *Computerworld Venezuela, Micro Computerworld*; WEST GERMANY's *Computerwoche, Information Management, PC Woche, PC Welt, AmigaWelt, Macwelt*.

Manuscripts: Contributions in the form of manuscripts with drawings and/or photographs are welcome and will be considered for possible publication. *AmigaWorld* assumes no responsibility for loss or damage to any material. Please enclose a self-addressed, stamped envelope with each submission. Payment for the use of any unsolicited material will be made upon publication. All contributions and editorial correspondence (typed and double-spaced, please) should be directed to *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-0100. **Advertising Inquiries** should be directed to Advertising Offices, IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458; telephone: 800-441-4403. **Subscription problems or address changes:** Call 1-800-525-0643 (in CO, 1-303-447-9330) or write to *AmigaWorld*, Subscription Dept., PO Box 58804, Boulder, CO 80322-8804. **Problems with advertisers:** Send a description of the problem and your current address to: *AmigaWorld*, 80 Elm St., Peterborough, NH 03458, ATTN.: Margot L. Swanson, Customer Service Representative.

List of Advertisers

* This advertiser prefers to be contacted directly

This index is provided as an additional service. The publisher does not assume liability for errors or omissions.

FYI

If you have any questions or concerns about advertisers in *AmigaWorld*, please contact: **Margot L. Swanson, Customer Service Representative, *AmigaWorld* Magazine, 80 Elm Street, Peterborough, NH 03458**. As a service to its readers, *AmigaWorld* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Through our customer service representative, *AmigaWorld* assists readers with problems they may have with advertisers. However, *AmigaWorld* does not assume any liability for advertiser's claims. Readers are advised to contact *AmigaWorld* before dealing with these companies: **LightSpeed Distribution**; **Computer Mart. C Ltd.** and **Ingenuity, Inc.** are out of business.

Software Discounters International

WE ARE THE #1 SOFTWARE SOURCE FOR THOUSANDS OF COMPUTER OWNERS

If you've never shopped with us before, now is the time to find out why so many valued customers have!

- **Speedy Delivery**
- **Deep Discounts**
- **Astronomical Selections**
- **Free shipping on orders over $100**
- **No surcharge on MC/VISA**
- **Overnight & 2 day shipping available**

ACCOLADE

Play state of the art computer golf on Jack's favorite courses. Plus design your own unique signature courses. Comp. w/all J.N. course disks.



JACK NICKLAUS UNLIMITED GOLF
List $59.95
SDA Discount Price $39

ABACUS
Assem Pro ... $65
*Abacus Books in stock! .. Call
ACCESS
W.C. Leader Board Golf ... $19
ACCOLADE
Bar Games ... $29
Blue Angels Flight Sim ... $32
Cycles ... $32
Day of the Viper ... $32
Fast Break ... $14
4th & Inches Football ... $14
4th & Inches Team Const $6.88
Grand Prix ... $16
Hardball ... $25
Hardball 2 ... $32
Harmony ... $29
Heatwave Boat Racing ... $29
Ishido ... $35
Jack Nicklaus Golf ... $32
J.N. Golf 1990 Courses ... $16
J.N. Golf Champ Courses ... $16
J.N. Golf Int'l Courses ... $16
Strike Aces ... $32
Test Drive 2: The Duel ... $32
T.D. 2: Calif. Scenery ... $16
T.D. 2: Europe Scenery ... $16
T.D. 2: Muscle Cars ... $16
T.D. 2: Super Cars ... $16
Third Courier ... $32
ACTION WARE — *ON SALE*
Capone ... $21.88
Phaser Gun ... $32.88
Sideshow ... $28.88
ACTIVISION
Battle Chess ... $32
Beyond Dark Castle ... $14
Future Wars ... $32
Ghostbusters 2 ... $25
Neuromancer ... $29
Rampage ... $14
ARTWORX
Bridge 6.0 ... $25
Linkword Languages ... Call
Strip Poker 2 ... $25

S.P. Data #1 Females ... $14
S.P. Data #2 Female/Male $14
S.P. Data #3 Females ... $14
BETHESDA
Damocles ... $29
Dragon's Lair 2 ... $44
Gretzky Hockey ... $32
Hockey League Simulator $25
BOX OFFICE
Ikari Warriors ... $25
Speed Buggy ... $25
BRITANNICA/DESIGNWARE
Archipelagos ... $25
Designasaurus ... $32
BRODERBUND
Carmen S.D. — Europe ... $32
Carmen S.D. — Time ... Call
Carmen S.D. — U.S.A ... $32
Carmen S.D. — World ... $32
Omni-Play Basketball ... $32
Omni-Play Horse Race ... $32
Pictionary ... $25
Prince of Persia ... $25
Shufflepuck Cafe ... $25
Sim City ... $32
Sim City Terrain ... $16
Wings of Fury ... $25
BROWN-WAGH
Pen Pal Word Processor .. $89
BYTE BY BYTE/CENTAUR
B.A.D. Disk Optimizer ... $32
Sculpt Animate 4D Jr. ... $95
World Atlas ... $39
CINEMAWARE
Brainblaster ... $26
Dragon Lord ... $32
Federation ... $32
It Came From The Desert $32
Desert Scenario Disk ... $14
T.V. Sports Basketball ... $32
T.V. Sports Football ... $32
DATA EAST
Bad Dudes ... $9.88
Batman ... $9.88

ELECTRONIC ARTS



An extraordinary fantasy adventure w/an interface of magic by the wizards at Lucasfilm games.

LOOM
List $59.95
SDA Discount Price $39

Batman the Movie ... $29
Chamber Sci Mutant ... $32
Drakkhen ... $39
North & South ... $29
Robocop ... $9.88
Super Hang-On ... $9.88
DIGITEK
Hole in One Mini Golf ... $25
ELECTRONIC ARTS
Altered Beast ... $32
Aquanaut ... $26
688 Attack Sub ... $32
Battlehawks 1942 ... $32
Blockout ... $26
Budokan ... $26
Chessmaster 2000 ... $29
Cribbage/Gin King ... $26
Deluxe Music Const. ... $65
Deluxe Paint 3 ... $99
Deluxe Photo Lab ... $99
Deluxe Print 2 ... $55
Deluxe Productions ... $129
Dragon Force ... $32
Dungeon Master Asst. 1 ... $21
Empire ... $32
F/16 Combat Pilot ... $32
FA/18 Interceptor ... $14
Ferrari Formula One ... $14
Fools Errand ... $32
Gold of the Americas ... $26
Hound of Shadow ... $26

Tennis Cup ... $25
Treasure Trap ... $25
EPYX - *ON SALE!*
Axe of Rage ... $22.88
Death Sword ... $13.88
Project Neptune ... $15.88
Purple Saturn Day ... $13.88
Revenge of Defender .. $15.88
Space Station Oblivion . $8.88
Sub Battle Simulator ... $8.88
FREE SPIRIT
Amiga Alignment System . $32
Barney Bear Farm ... $23
Dr. Amiga ... $32
FTL
Dungeon Master ... $25
GOLD DISK
Desktop Budget ... $44
PageSetter 2 ... $84
Profess. Page V1.3 ... $249
INFOCOM
Battletech ... $19
Journey ... $19
King Arthur ... $19
Shogun ... $14
Zork Zero ... $14
INTRACORP
Superman Man of Steel ... $25
Trump Casino Gambling ... $25

DISNEY SOFTWARE

The 1st full featured animation & paint program to use Disney's cel animation techniques. Powerful yet EZ to use. State of the art.



ANIMATION STUDIO
List $179.95
SDA Discount Price $120

Hunt for Red October ... $32
Imperium ... $26
Indianapolis 500 ... Call
Indiana Jones Crusade
  Acton Game ... $26
Indiana Jones Crusade
  Graphic Adventure ... $32
Iron Lord ... $26
Keef the Thief ... $14
Loom ... $39
Maniac Mansion (Hi-Res) . $14
Marble Madness ... $14
Might & Magic 2 ... $32
Nuclear War ... $32
Pipe Dream ... $16
Populous ... $32
Projectyle ... $26
Puffy's Saga ... $23
Star Fleet 1 ... $36
Star Flight ... $32
Street Rod ... $26
Swords of Twilight ... $14
The Immortal ... Call
Their Finest Hour ... $39
Tunnels of Armageddon ... $26
Turbo Out Run ... $32
Vegas Gambler ... $26
Weaver Baseball ... $32
Yeagers A.F.T. 2.0 ... Call
Zak McKracken ... $21
ELECTRONIC ZOO
Legend of William Tell ... $25

MASTERTRONIC/VIRGIN
Clue Master Detective ... $25
Double Dragon 1 or 2 . $25 Ea.
N.Y. Warriors ... $32
Overload ... Call
Risk ... $25
Scrabble ... $25
MELBOURNE HOUSE
G. Norman Shark Attack .. $25
Magic Johnson's B. Ball .. $32
War in Middle Earth ... $32
World Trophy Soccer IMB $32
MICROILLUSIONS
Blackjack Academy ... $25
Faery Tale Adventure ... $32
Fire Power ... $16
Jetsons ... $32
Photon Paint 2.0 ... $95
MICROPOSE/MEDALIST
3-D Pool ... $23
Dr. Doom's Revenge ... $25
F-19 Stealth ... Call
Gunship ... $35
Honda RVF ... $25
M1 Tank Platoon ... Call
Midwinter ... $32
Pirates ... $29
Red Storm Rising ... $35
Silent Service ... $14
Stunt Track Racer ... $25
MICROSYSTEMS
Excellence W.P. 2.0 ... $159

DATA EAST

The hot European role playing adventure comes to the U.S. Superior gameplay and special effects. Characters interact whether you control them or not.



DRAKKHEN
List $59.95
SDA Discount Price $39

The Works-Platinum ... $179
Scribble Platinum ... $65
MINDSCAPE
After Burner ... $32
Balance of Power 1990 ... $32
De Ja Vu 2 ... $32
Gauntlet 2 ... $32
Hostage ... $29
Space Harrier ... $32
Super Star Ice Hockey ... $32
Thunder Blade ... $32
NEW HORIZONS
ProWrite 3.0 ... $118
NEWTEK
Digi-Paint 3.0 ... $65
Digi-View Gold 4.0 ... $129
OMNITREND
Breach 2 ... $32
Universe 3 ... $32
ORIGIN
Omega ... $32
Quest For Clues:
  1 or 2 ... $19 Ea.
Space Rogue ... $32
Times of Lore ... $25
Ultima 4 ... $39
Ultima 5 -
  Coming 1/91 they say ... $39
OXXI
Am. Graphics Starter Kit .. $65
Audio Master 2 ... $59
Draw 2000 ... $169
Sonix ... $49
PRACTICAL SOLUTIONS
Cordless Mouse ... $84
PRECISION
Superbase Personal 2 ... $95
Superbase Profess. 3 ... $189
READYSOFT
Dragon's Lair ... $39
Space Ace ... $39
SIERRA
Black Cauldron ... $25
Codename: Iceman ... $39
Colonel's Bequest ... $39
Conquest of Camelot ... $39
Gold Rush ... $25
Hero's Quest ... $39
Hoyle's Book of Games .. $23
King's Quest 1, 2 or 3 $32 Ea.
King's Quest 4 ... $39
Leisure Suit Larry ... $25
Leisure Suit Larry 2 or 3 ... $39
Manhunter N.Y. or S.F. $32 Ea.
Mother Goose ... $19
Police Quest ... $32
Police Quest 2 ... $39
Space Quest 1 or 2 ... $32
Space Quest 3 ... $39

SIR TECH
Bane of Cosmic Forge .. Call
SOFTWARE INSIGHT
Go-64 Emulator ... $19
SPECTRUM HOLOBYTE
Counterstrike (RQ Falcon) $16
Falcon ... $32
Tetris ... $23
Weltris ... $23
SPOTLIGHT
Dark Side ... $26
Deathbringer ... $26
Speedball ... $26
SSI
Champions of Krynn ... $32
Curse of Azure Bonds .. Call
Dragonstrike ... Call
Dragons of Flame ... $16
Heroes of the Lance ... $26
Hillsfar ... $32
Overrun ... $39
Pool of Radiance ... $39
Red Lightning ... $39
Second Front ... $39
Storm Across Europe ... $39
Sword of Aragon ... $32
Waterloo ... $39
SUBLOGIC
Flight Simulator ... $32
Hawaii Odyssey Scenery . $19
Jet ... $32
Scenery Disks ... Call
TAITO — *NEW LOW PRICES!*
Operation Wolf ... $9.88
Qix ... $9.88
Rambo 3 ... $9.88
Renegade ... $9.88
ULTRA
Teenage Mutant
  Ninja Turtle ... $29
UNISON WORLD
P.M. Fonts & Borders ... $23
P.M. Art Gallery 1+2 ... $19
Print Master Plus ... $25
ACCESSORIES
Inkwell Amiga Light Pen .. $84
Air Drive External ... $135
Bonus 3½ DSDD ... $9.99 Bx.
Sony 3½ DSDD ... $13 Bx.
Sony 3½ DSHD ... $24 Bx.
Sony DSDD Color .. $13.50 Bx.
Disk Case (Holds 45) .. $6.88
Disk Case (Holds 110) ... $8.88
Disk Drive Cleaner ... $4.88
Winner M4 Mouse ... $29
Mouse Pad 8½×11 ... $6.88
Wico Bat Handle J. Stk. ... $17
Maxx Control Yoke ... $69

CALL FOR SDA SALE ITEMS!

POLICIES & PROCEDURES

- SHIPPING: Continental U.S.A. — orders under $100 add $4: Free shipping on orders over $100: Call for details on overnight & 2 day shipping. AK, HI, FPO, APO - shipping is $5 on all orders. Canada and Puerto Rico — shipping is $7.50 on all orders. PA residents add 6% sales tax on the total amount of orders including shipping charges.
- UPS 2 day and overnight shipping available — Call.
- Orders with cashiers checks or money orders shipped immediately on in stock items. Personal and company checks, allow 14 business days clearance. No C.O.D.'s!
- Defective merchandise replaced within 60 days of purchase. Other returns subject to 20% restocking charge. You must call customer service for return authorization — 412-361-5291, 9-5:30 EST.
- Prices and availability are subject to change.

HOW TO ORDER

- Call us & use your Mastercard or Visa

USA/CANADA **1-800-225-7638**

Order Line Hours: Mon-Thurs 9:00 A.M.-9:00 P.M., Fri-9:00 A.M.-7:00 P.M., Sat-10:00 A.M.-4:00 P.M. EST.

- Send Money Orders or Checks to:

SOFTWARE DISCOUNTERS INT'L.
5607 Baum Blvd., Dept. AMW
Pittsburgh, PA 15206

- Fax MC/VISA orders with our fax #1-412-361-4545
- Order Via Modem on CompuServe, GEnie & QLink.
- School purchase orders accepted.

Circle 128 on Reader Service card.

Index to 1990 Articles and Reviews

Editor's note: Individual entries in the Index are presented alphabetically under two major headings: Articles/Columns and Reviews. Articles/Columns are organized alphabetically under the following subject categories:

- Games
- Graphics/Animation
- Hardware: Systems/Expansion/Peripherals
- Lists/Buyers' Advice
- Multimedia/Authoring Systems
- Music/Sound
- Operating System/Workbench
- Productivity/Business
- Programming
- PD/Shareware
- Telecommunications/Networking
- Video

Reviews are organized under the categories Hardware, Software and Games. The Index covers all 12 regular 1990 issues of AmigaWorld *plus the* 1990 Video & Animation Special Issue *(abbreviated SI in individual entries).*

ARTICLES/COLUMNS

WHEN YOU WANT MORE THAN EMPTY PROMISES...

"I consider Project D to be akin to a well equipped luxury automobile; it gives a smooth ride and lots of easy to use operations." - *AmigaWorld*

"Project D is certainly one of the most sophisticated, yet easy to use, disk utility packages available for the Amiga." - *Amiga Sentry*

"The user interface is wonderful..." Info Rated: 4+ stars - *Info Magazine*

Introducing the most complete disk utility system ever created for the Amiga. **Project D** includes a powerful Amiga disk copier, a special format copier, a software indexing utility and a disk editor. **Project D** also represents over *three years* of continuous support and enhancements.

BackupTool gives you the power to protect your software investment by making backup copies of your Amiga floppy disks. It will copy both non-protected and protected disks, *deprotecting* most of your favorite copy-protected software with ease. It supports up to four disk drives and lets you copy to multiple drives at the same time.

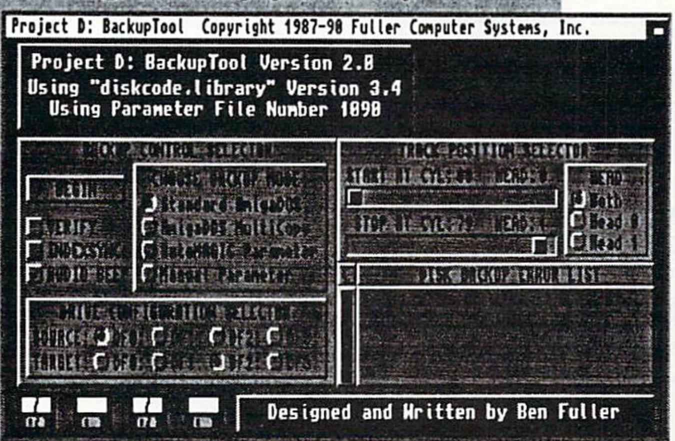
OmniTool allows you to duplicate disks that you may have for other computers. It is able to copy most protection schemes used by other computers and will even copy software that cannot be duplicated on the host machine! The **OmniTool** is able to duplicate the Atari ST, MS-DOS, CP/M and Xenix disk formats. It will also allow you to quickly duplicate most music synthesizer disk formats including *Ensoniq* and *Roland*.

EditorTool will give the expert user complete control over AmigaDOS floppy disks and hard drives. You can examine and edit disks at the sector level in HEX and ASCII. Features include data and bitmap block checksumming as well as boot block checksumming. You can search through the edit buffer for virus text, hidden passwords, messages and hex values. You can also edit MFM data on floppy disks.

CatalogTool will help you organize and index your software library. It can automatically read filenames from any AmigaDOS file system (DF0: HD0: etc.) or you can enter filenames manually. You can then quickly separate and sort your filenames into different categories.

Updating **Project D** is simple and inexpensive. We will notify you of new parameters every three months, and you can order updates as often as you like, for as low as **$10**. **Project D** is not copy protected in any way and is *completely compatible* with **the Amiga's** multi-tasking operating system.

You get all this for **$49.95** and that includes shipping and handling! So call now and order your copy of the best Amiga disk utility system, today!



Now Shipping Project D Version 2.0
AmigaDOS Release 2 Compatible

Project D:
The Disk Copier...Plus!

AVAILABLE AT FINE AMIGA DEALERS EVERYWHERE

...PROJECT D DELIVERS.

Fuller Computer Systems, Inc. Post Office Box 9222 Mesa, Arizona 85214 Orders: (800) 874-DISK Tech Support: (602) 497-6070 FAX: (602) 497-6071

►

The Software Shop, Inc.

Software & Hardware Special

1-800-752-0050

"Give Us the Opportunity to BEAT any advertised price"

GVP-A2000 ACCEL, MEM & HARDCARDS

A3001-68030-882/28MHZ+4MB	1469
A3001-68030-882/33MHZ+4MB	1679
A3001-68030-882/50MHZ+4MB	2559
GVP-A2000-HC/8+0 SRSII.	233
GVP-A2000-HC/8+2mg SRSII	328
GVP-A2000-HC/8+4 SRSI	430
GVP-A2000-HC/8+6mg SRSII	532
GVP-A2000-HC/8+8mg SRSII	633
GVP-A2000-HC/8+0+Q-40mg	569
GVP-A2000-HC/8+0+Q-80mg	739
GVP-A2000-HC/8+0+Q-105mg	799
GVP-A2000-HC/8+0+Q-170mg	1119
GVP-A2000-HC/8+0+C-209mg	1179
GVP-A2000-HC-SRSII+Q-40mg	518
GVP-A2000-HC-SRSII+Q-80mg	679
GVP-A2000-HC-SRSII+Q-105mg	759
GVP-A2000-HC-SRSII+Q-170mg	1069
GVP-A2000-HC-SRSII+209mgC	1175
GVPA2000-HC/0 SRSII	175

A2000 HARD CARDS

Hardframe 2000	$ 159
Quantum 50mg w/HF2000	519
Quantum 80mg w/HF2000	689
Quantum 105mg w/HF2000	749
Quantum 170mg w/HF2000	1069
209mg Conner w/HF2000	1129
Wordsync Supra Controller	129
Quantum 50mg w/wordsync	479
Quantum 80mg w/wordsync	659
Quantum 105mg w/wordsync	699
Quantum 170mg w/wordsync	999
209mg Conner w/wordsync	1089
ICD Advantage Controller	139
Quantum 50mg w/ICD Adv.	489
Quantum 80mg w/ICD Adv.	659
Quantum 105mg w/ICD Adv.	713
Quantum 1700mg w/ICD Adv.	1029

NEW A500 DRIVES & MEMORY

AD-IDE Controller A500	$118
AD-IDE-A500 w/40mg Teac	459
AD-IDE-A500 80mg Maxtor	649
Supra 500XP-20mg w/512K	559
Supra 500XP-20mg w/2mg	649
Supra 500XP-40mg w/512K	669
Supra 500XP-40mg w/2mg	759
Quantum 50mg w/GVP	659
Quantum 80mg w/GVP	849
Quantum 105mg w/GVP	899
Adram 540 A500 w/512K	142
Adram 540 A500 w/1mg	164
Adram 540 A500 w/2mg	225
Adram 540 A500 w/4mg	319
BaseBoard 512K	145
BaseBoard 1mg	179
BaseBoard 2mg A500	225
BaseBoard 4mg A500	329

A1000 HARDRIVES & MEMORY

Quantum 40mg w/Supra	$659
Quantum 80mg w/Supra	849
Quantum 105mg w/Supra	899
Starboard II 512K	209
Starboard II 1mg	229
Starboard II 2mg	329
Starboard 0K	184

HARDDRIVES

Quantum drive 40mg 11ms acc.	359
Quantum drive 80mg 11ms acc.	549
Quantum drive 105mg	589
Quantum 170MG 11ms	899
209mg.Conner 15ms	969
SYQUEST 44mg. W/cartridge	649
Syquest Media 44mg.	89

A2000 MEMORY CARDS

Supraram A2000 2mg	211
Supraram A2000 4mg	289
Supraram A2000 6mg	$389
Supraram A2000 8mg	449
8UP 2mg A2000	215
8UP 4mg A2000	295
8UP 6mg A2000	375
8UP 8mg A2000	459
AdRAM A2080 2mg	199
AdRAM A2080 4mg	279
AdRAM A2080 6mg	359
AdRAM A2080 8mg	439
RamWorks 2000 2mg	199
RamWorks 2000 4mg	279
RamWorks 2000 6mg	359
RamWorks 2000 8mg	439

CHIPS

Dram 1mg X 1 80/100ns	9
Dram 1mg Zip -10	10
Dram 256X4 180/100ns	9
Sim Module 80/100ns	75
SCram 4X1 70/80ns zip	75

ACCESSORIES

- 6 outlet AC Surge ... 16
- A/B/C/D Switchbox ... 39
- A1000 Safe skin ... 22
- A2000 Safe skin ... 22
- A3000 Safe skin ... 22
- A500 Safe skin ... 22
- Amtrac Trackball ... 79
- Boing optical mouse ... 109
- Copy Stand ... 69
- Ece Midi 1000 ... 52
- Ece Midi 500/2000 ... 52
- Ergo Joystick ... 17
- Gravis Joystick ... 37
- Modem cable A1000 ... 15
- ModemcableA2000/500 ... 15
- Mouse pad ... 9
- Printer cable 2000/500 ... 15
- Printer cable A1000 ... 15
- Video int. A500 a ... 65

CAD

- Draw 2000 ... 183
- Home builder cad ... 129
- Home builder choice ... 53
- Home Buildr library ... 79
- Intro cad ... 51
- Intro Cad Plus ... 99
- Pro-Board ... 399
- Pro-Net ... 399
- Ultra Design ... 269
- X-Cad Designer II ... 97
- X-Cad designer Pro. ... 304

COMMUNICATION

- Online ... 44
- Atalk III ... 65
- Online Platinum ... 67
- BBS pc ... 96
- Skyline BBS com ... 99

DATABASE

- Data retrieve ... 51
- Dbman V ... 189
- Super base ... 52
- Superbase pers. II ... 99
- Superbase Pro. 3.0 ... 219

DESKTOP PUBLISHING WORDPROCESSOR

- Gold spell II ... 30
- Pro-page template ... 42
- Pro-draw clip art ... 42
- Transcript ... 47
- Text pro ... 50
- Publisher plus ... 69
- Who-What-When ... 69
- Wp library ... 79
- Page setter II ... 89
- Becker text ... 92
- Pen Pal ... 102
- Prowrite v3.0 ... 99
- Professional Draw ... 129
- Publishers Choice ... 69
- City Desk 2.0 ... 135
- Word Perfect ... 149
- The Works Platinum ... 164
- Professional Page ... 175
- Excellence! 2.0 ... 179
- Gold Disk Office ... 189
- Professional page 1.3 ... 199
- Page stream 2.0 ... 199

EDUCATION

- Adventure of sinbad ... 32
- Aesop's fables ... 32
- All about America ... 35
- Animal kingdom ... 32
- At the Zoo ... 27
- Decimal dungeon ... 32
- Dinosaur Discov. kit ... 29
- Discovery game math ... 25
- Discovery game spell. ... 25
- Fraction action ... 32
- Intellitype ... 32
- Kid talk ... 35
- Kinderama ... 32
- Learning curve ... 32
- Letters For You ... 28
- Master type ... 25
- Math Odyssey ... 33
- Math talk ... 35
- Math talk fraction ... 35
- Math wizard ... 35
- Mavis beacon typing ... 33
- Numbers Count ... 28
- Project Master ... 129
- Puzzle Story book ... 29
- Read & rhyme ... 32
- Read-a-rama ... 32
- Rhyming note book ... 32
- Spell bound ... 25
- Speller bee ... 35
- Tales from Arabia ... 32
- Talking Animator ... 34
- Where in the U.S. ... 35
- Where in World C.S. ... 32
- Where inEurpe.C.Sdiego ... 35
- Wordmaster ... 32
- World Atlas ... 39
- World Odyssey ... 33
- Your family tree ... 32

FONTS

- Calligrapher ... 85
- Fancy 3d fonts ... 52
- Font set I ... 22
- Headline Fonts ... 54
- Headlines 2 ... 47
- Inter font ... 76
- Kara Anim font 1 ... 35
- Kara Anim Font 2 ... 35
- Kara fonts color ... 50
- Kara fonts Headline 2 ... 48
- Kara fonts subheads ... 48
- News letter fonts ... 29
- Page Stream fonts 1-15 ... 29
- Profonts I Prof. ... 23
- Profonts II decorative ... 23
- Studio font ... 29
- Subheads ... 47

GRAPHICS & VIDEO

- DCTV ... 439
- 3-Demon ... 73
- 3d options ... 35
- 3D Professional ... 299
- Animagic ... 95
- Animate 3-D ... 99
- Animation editor ... 39
- Animation effects ... 32
- Animation Flipper ... 32
- Animation multiplane ... 58
- Animation stand ... 32
- Animation Station ... 69
- Animation Studio ... 111
- Animation Titler ... 59
- Animation w/images ... 89
- Animator apprentices ... 185
- Animotion ... 65
- Architectural Design ... 23
- Art Department ... 59
- Broadcast Titler II ... 229
- C light 3d editor ... 39
- Caligari ... 159
- Can do ... 99
- Chroma paint ... 48
- Comicsetter ... 65
- Credit text scroller ... 29
- Deluxe Paint III ... 102
- Deluxe photo lab ... 102
- Deluxe print II ... 59
- Deluxe video III ... 106
- Design 3-D ... 67
- Designasaurus ... 32
- Digi paint 3 ... 69
- Digi View Gold 4.0 ... 131
- Digimate III ... 28
- Digiworks 3d ... 89
- Director Tape ... 38
- Director's Toolkit ... 26
- Elan Performer ... 41
- Express paint III ... 89
- Fantavision ... 42
- Future design 3-d ... 23
- Human design 3-d ... 23
- Int. design sculpt3d ... 23
- Interchange ... 32
- Invision ... 109
- Lights Camera Action ... 49
- Microbot design 3-d ... 23
- Modeler 3d ... 64
- Movie clips ... 29
- Movie setter ... 65
- Page flipper fx ... 95
- Pagerender 3-D ... 105
- Photon Paint 2.0 ... 97
- Pixmate ... 43
- Print master plus ... 33
- Pro video plus set I ... 83
- Pro video plus set II ... 83
- Pro Video Post ... 220
- ProVideo Gold ... 163
- Scene Generator ... 29
- Sculpt 3-d ... 64
- Sculpt Anim. 4D ... 399
- Sculpt-Animate 4-D Jr. ... 95
- Super Clips ... 22
- The Art Dept. ... 59
- The Director ... 46
- Turbo silver 3.0 ... 119
- Turbo Silver Module ... 20
- Tv Text Prof. ... 111
- Tv-show 2.0 ... 64
- Tv-text ... 64
- Video effects 3d ... 121
- Video scape 3-d ... 120
- Video titler ... 95
- Vista ... 69
- Zoetrope ... 89

HARDWARE

- A3000 Internal Drive ... 99
- ADFlicker Free Video ... 349
- ADSpeed A500 Accel ... 249
- AE 3.5 External Dr. HD ... 215
- AE External Drive ... 109
- AE Datalink 2000 MNP5 ... 175
- AE Datalink Exp. MNP5 ... 269
- Air Drive External ... 99
- Amax II Emulator ... 149
- Amigen ... 153
- Asia 3.5 External Drv. ... 115
- Baud Bandit level 5 ... 155
- Color Splitter ... 120
- Desktop budget ... 46
- Easyl A1000 ... 349
- Easyl A2000 ... 379
- Easyl A500 ... 345
- Flicker fixer ... 425
- Flicker Free Video ... 359
- FramebufferW/capture ... 549
- Future sound ... 129
- Internal 3.5drive A2000 ... 89
- Mac 3.5 Drive ... 229
- Mac Rom Chip ... 149
- Midi Gold (500) ... 60
- Migraph Scanner ... 349
- Mini Gen ... 210
- Perfect sound V.3.0 ... 75
- Power Supply A500 ... 109
- Scanlock ... 789
- Sharp JX 100 Scanner ... 789
- Super Gen ... 695
- Supergen 2000S ... 1679
- Supra 2400bd internal ... 149
- US Robotics 9600bd HST ... 669
- WV1410 Cam.W/lens ... 199

LANGUAGE UTILITIES

- A/C basic ... 129
- A/C fortran ... 195
- Adapt ... 79
- Arexx ... 33
- Assem pro ... 65
- Aztec C developer ... 195
- Aztec C professional ... 129
- B.A.D.disk optimizer ... 32
- Benchmark c lib. ... 62
- Benchmark C library ... 62
- Benchmark iff library ... 62
- Benchmark modula 2 ... 128
- Benchmark simplified ... 62
- Bnchmark SrcLevDebug. ... 62
- C.B. Tree ... 65
- Cape 68k ... 59
- Cross Dos 4.0 ... 29
- Cygnused Professional ... 65
- Devpac Vrs.2 ... 66
- Disk 2 disk ... 33
- Disk master 1.4 ... 33
- Disk mechanic ... 59
- Dissasembler ... 45
- Dos 2 dos ... 35
- Hisoft Basic pro. ... 118
- Inovatools #1 ... 54
- Lattice Dev.System 5.4 ... 225
- Mac 2 Dos ... 99
- Momentum Mail ... 22
- Nag Plus Schedule Assist. ... 52
- Pixel script ... 104
- Power windows v2.5 ... 58
- Pro script ... 32
- Project D ... 32
- Quarterback 4.1 ... 45
- Raw copy 1.3 ... 39
- Source level debugger ... 65
- Super Card A2000 ... 79
- True basic ... 65
- V.I.P. ... 32
- W. shell ... 33
- X-copy II ... 29

MONITORS

- NEC 3D multisync ... 699
- Panasonic C1381HI/Res ... 499
- Sieko cm1430 monitor ... 699
- Sony multi-scan Monitor ... 535
- Taxan 1000 20' Ultrasync ... 2899
- Zenith 14' Flat CRT ... 720

PRINTERS

- 1124PanasonicPrinter ... 349
- AlpsAllegro24PIN ... 425
- Citizen200GX ... 210
- CitizenGSX140PRT.Color ... 399
- HPpaint jet ... 1029
- NECLC890laserPS. ... 3395
- Starnxrainbow ... 259

SOUND & MUSIC

- 4-opdeluxe ... 97
- Audiomaster ... 37
- AudiomasterII ... 67
- Backsongbook ... 27
- Bars&Pipes ... 179
- CopyistII ... 179
- D-50 ... 99
- Deluxemusic ... 65
- Drdrums ... 28
- Drkeys ... 28
- DrT'sKeyboard ... 160
- DrT'sMidiRec.Studio ... 47
- Dxheaver ... 97
- Dynamicdrums ... 52
- Dynamicstudio ... 129
- FuturesoundA500/A2000 ... 92
- KcsLevelII ... 225
- Matrix6 ... 97
- MidiMagic ... 97
- Mt-32 ... 97
- Music-X ... 205
- Musicstudent ... 38
- Promidistudio ... 129
- Prosounddesigner ... 125
- Sonix ... 51
- SoundOasis ... 69
- SoundQuestTexture ... 99
- Soundsampler ... 78
- SoundTrackVol. ... 135
- Studiomagic ... 65
- Synthia ... 59
- SynthiaPro. ... 199
- Texture ... 97
- TigerCub ... 62
- Utilities2(mimatics) ... 43

SPREADSHEET

- Advantage ... 129
- Analyze!2.0 ... 95
- Easy Ledger ... 189
- Financial plus ... 189
- Haicalc ... 32
- Maxiplan500 ... 95
- Maxiplanplus ... 126
- Money Mentor ... 65
- Nimbus record keeper ... 95
- Phaser ... 65
- Service Industry Acc'ting ... 225
- Superplan ... 97
- VIPProfessional ... 65

TO ORDER BY FAX **1-508-799-9354**

FOR PRODUCTS NOT LISTED CALL:

1-508-756-6452

PLEASE SEND ALL CORRESPONDENCE TO:

THE SOFTWARE SHOP, INC.
22 FRONT ST. P.O. BOX 55
WORCESTER, MA 01614

PRICES, TERMS AND AVAILABILITY SUBJECT TO CHANGE WITHOUT NOTICE.

POLICIES:

1- WE ACCEPT VISA, MASTERCARD
2- SHIPPING: ANY ITEM - $6
ANY TWO ITEMS - $7
NEXT DAY DELIVERY AVAILABLE.
3- COD CHARGE OF $5
4- PURCHASE ORDERS MUST BE APPROVED
5- INTERNATIONAL ORDERS WELCOME.
6- RETURNS ARE SUBJECT TO 15% RESTOCKING FEE.

CALL FOR ENTERTAINMENT SOFTWARE

Circle 134 on Reader Service card.

SPIRIT INSTANT REBATE & COUPON BONANZA

Valuable Instant Rebates
PLUS $250 In Spirit Coupons
For Future Spirit Purchases

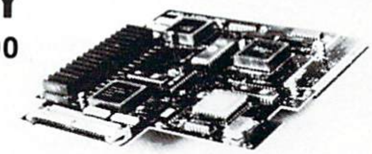
A $569 VALUE

2MB FREE RAM REBATE ON NEW IN-MATE™ AT OK PRICE

PLUS $250 IN SPIRIT COUPONS!

Installs Inside A500
Also in A2000

ONLY $549.00



A $709 VALUE

Regular OK:	$549
Regular 2MB:	$709
INSTANT REBATE:	$160
REBATE SPECIAL:	$549

1 SCSI INTERFACE
IN-MATE . . . fast, SCSI hard drive interface inside leaves your 86-pin expansion port free!

2 RAM MEMORY EXPANSION
IN-MATE . . . 2, 4 or 8MB zero wait state fast RAM inside Amiga 500 or 2000!

3 MATH CO-PROCESSOR
IN-MATE . . . 68881 Math co-processor for programs using floating math calculations.

PLUS . . .
4-LAYER CMOS BOARD
. . . low noise, 4 layer board with low power CMOS 68000 processor and CMOS circuitry and parts.

IN-MATE also operates in an A2000. It'll move with you if you move up and frees-up A2000 expansion slots.

SCSI FEATURES
- Autoboot and Fast File System partitions.
- Non-DMA with transfer rates up to 500 Kbytes.
- Supports up to 6 SCSI devices and **Tape Backup**.
- Implements Commodore's Rigid Disk standard.
- Compatible with 86-pin expansion devices using DMA.

RAM FEATURES
- Up to 8MB zero wait state fast RAM.
- Autoconfig at boot time.
- Socketed Zip configuration expandable from OK:
  1.0 & 2.0MB with 256K x 4 20-pin Zip DRAM
  4.0 & 8.0MB with 1 Meg x 4 20-pin Zip DRAM

PLUS FEATURES
- Socketed for 68881 Math Co-processor.
- **Uses less than 700 ma power with on board CMOS MC68000 microprocessor and CMOS** parts and circuitry puts IN-MATE well within the power range of standard A500 power supply.
- Simple, solderless plug-in installation.
- Includes software support disk with test and utility programs.

PLUS $250 IN SPIRIT COUPONS!

A500 RAM MEMORIES

512K MEMORY (A501 clone) INSIDE A500	
"TRAPPER" OK	$44
With 512K memory	$76
2 MB MEMORY INSIDE A500	
"SIN-500" OK	$199
With 0.5MB memory	$239
With 1.0MB memory	$279
With 2.0MB memory	$359
8MB MEMORY FOR A500 MIGRATES INTO A2000	
"X-RAM" OK	$270
With 2.0MB memory	$398
With 4.0MB memory	$526
With 6.0MB memory	$654
With 8.0MB memory	$782

A2000 RAM MEMORY

8MB MEMORY FOR A2000	
"OCTABYTE" OK	$192
With 2.0MB memory	$320
With 4.0MB memory	$448
With 6.0MB memory	$576
With 8.0MB memory	$704

A1000 RAM MEMORY

1.5MB MEMORY BOARD FOR A1000	
IN1000 OK	$199
With 0.5MB memory	$231
With 1.0MB memory	$263
With 1.5MB memory	$295
8MB MEMORY FOR A1000 MIGRATES INTO A2000	
"X-RAM" OK	$270
With 2.0MB memory	$398
With 4.0MB memory	$526
With 6.0MB memory	$654
With 8.0MB memory	$782

ST-506 HARD DRIVE INTERFACE PACKAGES!

Drive not included

FOR A500 and A1000	
"HDA-506" SYSTEM	ONLY $299
FOR A2000	
"SLOT MACHINE" HARD CARD SYSTEM	Only $199

$70 INSTANT REBATE INTERLOK™

MODEL IGL-1
Genlock/Encoder for All Amigas

ONLY $499.00



Regular NTSC:	$569
INSTANT REBATE:	$ 70
REBATE SPECIAL	$499
Regular PAL:	$749
INSTANT REBATE:	$ 90
REBATE SPECIAL	$659

The Genlock that won't crash your computer during video search editing . . . that pays meticulous attention to artist's colors . . . that offers professional video specs for the best price/performance in the market.
- Looping video IN with switchable termination.
- NTSC or PAL encoded video OUT.
- R-G-B & KEY outs.
- RGB matching level selection for A500/A1000/A2000.
- 0 to 100% fade overlay slider on removeable panel.
- Control Panel can be remoted to 25' or more.

PLUS $250 IN SPIRIT COUPONS!

$20 INSTANT REBATE ON WORLDS FASTEST HARD DRIVE BACKUP! BYTE'N'BACK™

ONLY $49 . . . a $69 value.

Regular Price:	$69
INSTANT REBATE:	$20
REBATE SPECIAL	$49

- Faster . . . only 55 Secs per disk (no verify).
- Stores more files per disk . . . 935K.
- Asynchronus scan mode.
- Drag-by-group file select.
- Extra user friendly.
- FREE updates to registered owners.

FLOPPY DISK DRIVES!

AIR DRIVE EXTERNAL FOR ALL AMIGAS	
A1010	ONLY $99
Low profile, lower power, 36" cable, pass thru, on/off switch.	
AIR DRIVE INTERNAL FOR A2000	
A2010	ONLY $89
Direct replacement or 2nd drive with dust door and mounting kit.	
AIR DRIVE INTERNAL FOR A3000	
A3020	ONLY $99
Direct replacement or 2nd drive, LED and compatible button.	

GET THE SPIRIT! **ORDER AND INFORMATION TOLL FREE 1-800-433-7572**

SPIRIT TECHNOLOGY

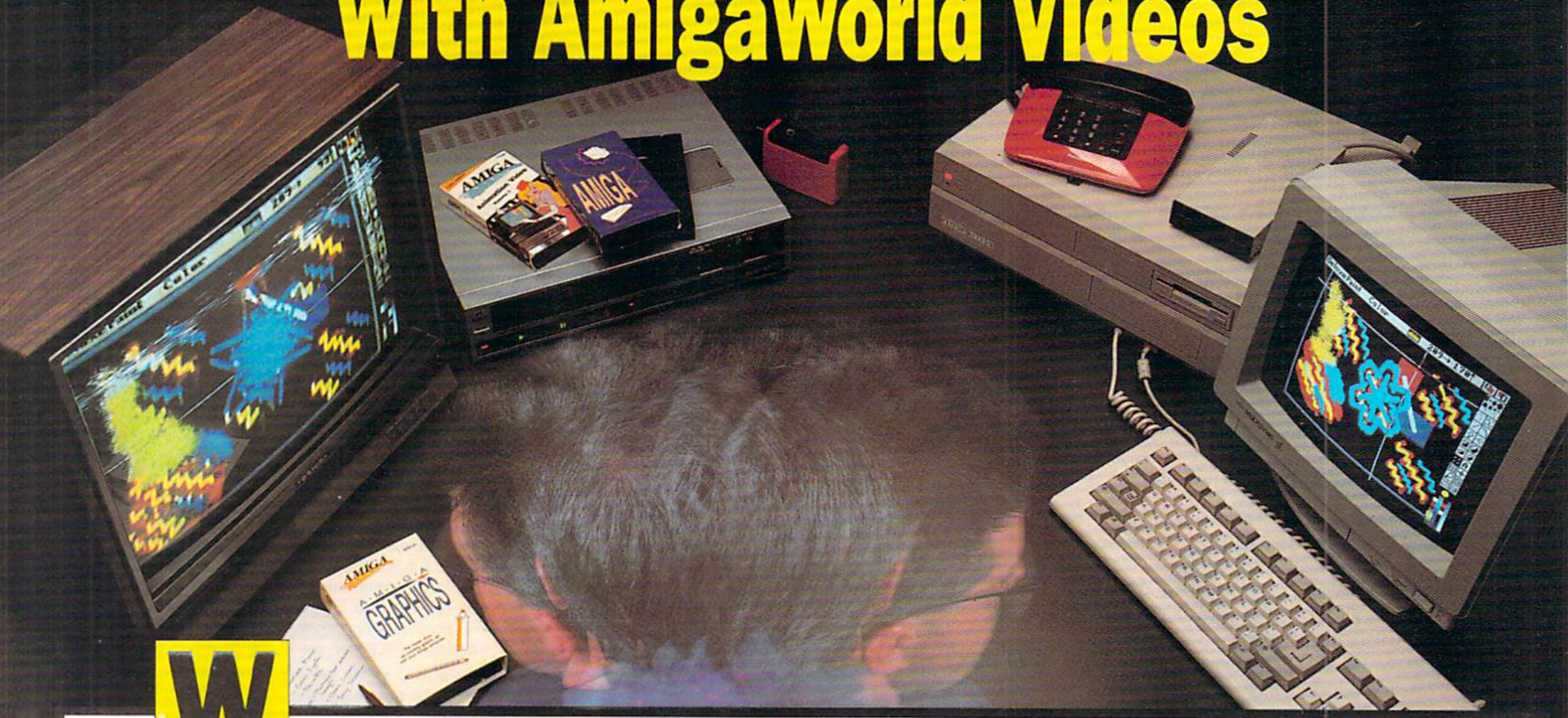
Spirit Technology Corporation, 220 West 2950 South, Salt Lake City, Utah 84115
Phone: (801) 485-4233, FAX: (801) 485-6957, U.S.A. Sales: (800) 421-6045

VISA, MASTERCARD & AMERICAN EXPRESS cards accepted with no surcharge. COD accepted, add $3.50. Shipping and insurance extra. All products shipped UPS 2nd day unless otherwise requested. All prices U.S. dollars, domestic U.S. sales only. Prices and specifications subject to change without notice. Prices of products containing RAM memory may vary due to fluctuations in the DRAM market.

ALL SPIRIT PRODUCTS ARE BACKED WITH ONE YEAR WARRANTY AND EXCEPTIONAL TECHNICAL SUPPORT.

Circle 19 on Reader Service card.

Novice To Expert In No Lapsed Time... With AmigaWorld Videos



Why try to figure it out all by yourself? With AmigaWorld Videos, it's like having a professional computer consultant at your side, 24 hours per day! AmigaWorld Videos cut your learning time dramatically...and you get hints, tips and advice that only the experts know. Watch each video, follow the step-by-step techniques, and hone your skills entirely at your own pace. Then, you can refer to them for brush ups and refreshers. Build your own video library and watch your accomplishments soar! Order your copies today.

NEW! AMIGA MUSIC

From a simple tune to a full concert—the Amiga can help you do it all. This extraordinary video shows you what you need to get started and how to play music with existing software. You'll learn the best ways to sample sounds and manipulate sampled sound to produce dazzling special effects. And if you want to learn more about using a MIDI, this is the video that can help. It explores the uses of MIDI and gives you valuable ideas from some of the best Amiga musicians in the country.

AMIGA GRAPHICS, Volume I

You'll be amazed at how fast you'll be producing excellent art. This hour-long video adventure explores the full capabilities of Amiga art. It delves into computer painting...discusses the pros and cons of the most popular paint programs...tells you when HAM is a good idea...shows you how interlace works...and describes smearing, washing and tinting. Plus you get three extensive sessions on fonts, clip art and even digitizing!

DESKTOP VIDEO

Business presentations, instructional videos and even home movies—this exciting video shows how you can use video with your Amiga. You'll gain valuable insights into evaluating Genlocks, using your camera with professional results, developing effective production operations, creating terrific special effects, adding animation and more. It's a video you won't want to miss!

GETTING STARTED WITH YOUR AMIGA

There's no easier way to master the basics...and some of the more sophisticated operations as well. In a lively and easy-to-follow format, this video starts with assembling your system, feeling comfortable about working with screens, icons, and windows, and becoming a wiz at Workbench. It then addresses some of the more advanced topics of working with CLI, maximizing the use of your utilities and using a modem to expand your horizons.

ANIMATION VIDEO

When the editors of AmigaWorld canvassed the Amiga community looking for the best in Amiga animation, the response was overwhelming! Replies poured in from Amiga master artists as well as super-talented readers. The result—a mind-blowing video featuring dozens of real-world animations demonstrating what's being done and what you can do. Order your copy today...it's already becoming a collector's item!

For immediate ordering service call TOLL FREE 1-800-343-0728 or send in the coupon below.

YES! I am eager to become an expert!
Please send me the following videos:

- ❑ NEW! AMIGA MUSIC....$29.95 *
- ❑ AMIGA GRAPHICS, Volume I....$29.95
- ❑ DESKTOP VIDEO....$29.95
- ❑ GETTING STARTED WITH YOUR AMIGA....$29.95
- ❑ ANIMATION VIDEO....$19.95

Please include $2.95 for shipping and handling for one video, $5.00 for two or more.

Amount Total $__________

❑ Check/Money Order ❑ Mastercard ❑ VISA ❑ AmEx ❑ Discover

Make checks payable to AmigaWorld Magazine or fill in your account information at right.

Account#__________ Exp.date__________
Signature__________
Name__________
Address__________
City__________ State____ Zip__________

Available in VHS only. Please allow 4-6 weeks for delivery. Foreign orders, add $7.50 for airmail delivery; $18 for two or more videos. Payment must be made in U.S. funds drawn on U.S. banks. IDG/Peterborough, publisher of AmigaWorld, is the licensed North American distributor of AmigaWorld Videos.

VID191

AmigaWorld Video Library P.O. Box 802, 80 Elm Street, Peterborough, NH 03458 ☎ 1-603-924-9471 ☎ 1-800-343-0728

* available in September

DevWare

$5.95 ea
1-9 Disks

$4.95* ea
10-24 Disks

$3.95* ea
25+ Disks

*** Anti-Virus Free on all orders with 15 or more disks!**

Public Domain Library

We are the **Offical Public Domain Library of Antic Amiga Plus**, we have been the **Offical PD library of Amiga World.** Find out why these magazines choose us! Each of our disks are jam packed with nothing but the best programs. The first two letters on each disk indicate the orientation of the disk; DD# intermediate to advanced - often contains source, WB# general interest - most programs can be run from the workbench, and FD# games and entertainment. Order our disk based catalog and receive a coupon for a **FREE** volume on your next purchase. We always use only SONY disks!

Featured Disk

FD39a & b:Tobias Star Trek - This is a new, completely different version of Star Trek than that found on FD12. The one was created by the German author Tobias. Now with English instructions. Very Excellent!!! Counts as two disks. Requires 512k memory, and a 500, 2000 or Pal Amiga.

New Disks

FD41:Games - Includes Capital Gains - a stock market game, Ball a Arknoids type of clone with many great twists, and Desert Shield - a shoot'em up with a destroy and conquer theme.
FD42:Games - Includes SpaceWar3 - a remake of this original Amiga classic, Trippin - a fascinating board game of intrigue, strategy, and player manipulation, Dominion - an engrossing strategy game of galactic war and conquest, Frog - a frogger type clone, and Mines - a very challenging strategy board game.
WB66:Icons #2- Lot's of neat icons. Also, several wonderful programs that to let you create your own icons, modify and manipulate icons and info structures.
WB67:MED songs - Several .mod files (playable songs) for use with noisetracker, soundtracker, or MED. MEDplayer included.
WB68:Music Utilities - several good utilities for the Amiga music enthusiast. Includes, Noisetracker - a great music creation program, Sonix2MOD - converts sonix to .mod files which then can be used by noisetracker, soundtraker, and MED, SpeakerSim - a speaker design tool demo, Wondersound is an additive harmonic instrument design tool with a separate envelope design window and 16 relative harmonic strength and phase angle controls.
WB69: Music - This disk has over 90 minutes of classical and modern electronic music for you Amiga.
WB70:Desk Top Pub - Atcp - transfer Macintosh screen fonts, Mac or IBM format .AFM metric files, to Amiga screen fonts and PPage .metric files. With this program open door to the libraries of Adobe and PostScript type!, Calendar - month templates in PS form, Post - a full featured post script file display and print utility.
WB71:C64 Emulation - The A64 Package is a complete, very powerfull, Commodore 64 emulator.
DD71:C compiler - This disk contains Dice, Matthew Dillon's full featured, powerful C compiler and environment system.
DD72:VT Emulators - Contains three powerful, full featured vt emulators, with many advanced features including kermit, xmodem and tektronix protocols. VaxTerm, VLT, and more.
DD73:BBS - Includes three different BBS's with many advanced features. PLW, Pro-BBS, and Trans-10.

Other Great Disks -

FD5: Tactical Games - BullRun - a Civil war battle game, Metro - you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very very habit forming.
FD6: GAMES! - This disk is chock full of games including: Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.
FD7: PACMAN - This disk contains several pacman type games including: PacMan87, MazMan and Zonix.
FD9: Moria -. This has great graphic controls, multiple spells, similar to Larn and Hack. Play time several weeks!
FD10: HackLite - A dungeon adventure game. Considered a must-have classic. This is the second release of this game on the Amiga. Great Amiga graphic interface. Play time several weeks!
FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great gameplay. Counts as 2 disks. Req. 1Mb and two drives (or hd).
FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoids, and others.
FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arkanoid/breakout type game, Trix - a Qix type clone.
FD16: Strategy Games - Includes Diplomacy and Empros, both great conquer and rule multiplayer games similar in concept to Simcity and Populace. Also includes blackbox, hearts, and others.
FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune.
FD20: Tactical Games - MechForce(3.72): A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.
FD26:Arcade Games - Marble_slide, this is a truly commercial quality game. Similar to a Lucas game named PipeDreams, excellent playablitly and entertainment, Mutants , a small version of the arcade game of the same name, also SuperBreakout a pong/arkanoids type game.
FD29: Shoot'em up's - WWII - you're the pilot of a WWII plane flying through enemy territory, you've just been spotted, good luck on you mission, SpKiller - try and penetrate enemy lines with this game, and Retaliator - another great game.
FD32: Game Cheats and Flight Simulator - Includes an instrument flight simulator for a DC10. Also Cheats and Hints for the following games, Earl Weaver, Falcon, It c.f.t.d., SimCity, SpaceAce, Space Quest, Test Drive hd install, and Extract, a program that gets all of the text from within a game (or other) which makes cheating easier. Also several football teams (.team files).
FD33: Arcade Games - Ffreddy a mario brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and wetroids a wonderful version of asteroids with a hilarious twist.
FD35 Omega (v 1.3) - A new dungeon and outdoors adventure game in a similar vein as hack, rouge, and moria. This version is considerably faster and better than all previous versions. Play time, months.
FD37a & b:Tactical Games - Empire (2.2w) This game comes highly recommended. Now with a full-featured graphic front end. Empire is a rich simulation of international politics, economics and war, which is played over a period of a few of months by 2 or more people. Players can run their countries from the normal Amiga keyboard, or via a modem at 300 to 2400 baud. Counts as two disks.
FD38:Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.
FD40:Arcade - MiddleEast - a timely arcade game of death and destruction set in Iraq, BackToTheFutureII - a very playable demo version of this soon to be released commercial game, City - a missile command clone.
WB4:Telecommumnication - This disk contains several excellent pd communication programs designed to get you on line quickly and easily, Access (1.42) - A very nice ANSI term program based on Comm v1.34, but with the addition of transfer protocols, Comm (1.34) - Last version of one of the best public domain communications programs ever made on the Amiga, Handshake (2.12a) Handshake is a Full featured VT52/100/102/220
WB5 - Fonts #1- Several fonts (35) for the Amiga, also included are five PageStream fonts,and ShowFont - a font display program.
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.
WB10:Virus Killers - The latest and best VirusX(4.0), Kv(2.1), and ZeroVirus(1.3).
WB12: Disk Utilities #1- This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery, archiving and organizing, and all sorts of file and directory manipulation. Incudes SID, greatly reduces CLI use.
WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, with PrtDrvGen you can make your own.
WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/schedular, a rolodex program, and pennywise a good "Cash Book" accounting for home or office.
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB20: General Interest - DiskSalv V1.42 a disk recovery program for all Amiga file systems, FixDisk V1.0 another file recovery program with features DiskSalv doesn't have, 3DLookt gives a 3D appearance to your WorkBench, Clean V1.01 a program to de-fragment memory, Tracer - trace any part of an image.
WB23: Graphics and Plotting - Plot (20b) a three dimensional mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map iff image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere, great for DTP .
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB26: Disk Utilities #2 - MrBackup, KwickBackup - two well done utilities to help with harddisk and floppy disk backups, FileMast - a binary file editor, Labelprinter - Disk label printer with very powerful features.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB29: Graphics and Sound - This disk has several different Mandelbrot type programs for generating stunning graphics. Includes, MandelMountains - a realistic terrain generator, Fracgen - generated recursive fractals from user input, Mandelbrot and Tmandel - two fast mandelbrot generators, also Mostra - the best IFF display program to date, will display ALL IFF's including Dynamic HAM, and Sound - a great IFF sound player, will play anything. Try this disk, you'll love it!
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast. Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular

X-MAS Special

Free 2nd Day Shipping On Orders Over $30.00

Expires 12-21-90, Continental US only.

images as part of your workbenck screen, and RayShade - a very good raytracing program, create your own beautiful 3d graphics.
WB38: Plotting and Graphics - Plotxy is the most powerful full featured plotting package. Used by many colleges and universities. A welcome addition to our library! Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.
WB39: Music - Intuitracker is an German offer of an exquisitely well done program that allows you to play music on your Amiga with CD like controls. Lets you strip out music from your favorite games or others and include them in your music library.
WB40: Music - "CD on a disk", 90 minutes of modern music on this well presented collection.
WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful, easy to use program.
WB43:Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package.
WB53:Graphics- The disk contains C-light - The easiest to use raytracing we have seen to date. This one started out life as a full featured commercial product similar to Sculpt3d. Raytracing programs can generate stunning, realistically shaded objects. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...
WB54:Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and many more.
WB55:Application - XCopyIII - a full featured disk copier, make backups of write protected disks. RoadRoute - find the quickest route from one city to another, highway description included, Diary - a diary program like "Dougy Howard M.D", Cal - a calendar program, Magman - a database tailored to maintain records on articles and publications.
DD47: Pascal - This disk contains everything needed to program in Pascal. Includes, A68k (1.2) 68000 assembler, Blink linking software and PCQ (1.0) a modest Pascal sub-set compiler.
DD49: C Compiler - contains zc(1.01) fully K&R, zcc(1.0) front end, A68k(1.2) assembler, Blink linker.
DD51: Circuit Analysis - Aspice (2.3) A full featured program for electric circuit analysis.
DD52: Scientific - Includes Elements - an incredibly well done periodic table program with source, Scientific plotting - over 600k of Lattice C source routines that can be included in your own programs.
DD54: Compression - This disk is loaded with ALL of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc(2.3), Lharc(1.0), Lhwarp(1.03), Pkax(1.0), PowerPacker(2.3a) a must have by all, Zip(1.0), Warp(2.04), and Zoo(2.0). Also IFFcrunch an excellent compression for IFF files.
DD55: ARP - On this disk you will find the complete ArpRel3.0 release including the full user docs, the full Developers guide, and Conman (1.4). ARP is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI.
DD57: Advanced Utilities - Msh - like Cross-dos, copies files to and from MS-DOS, Pal-NTSC - convert any pal program to NTSC and vice versa, Also several utilities that improve your startup-sequence, plus 25 more programs.
DD62: Basic and Xscheme - Cursor - a full featured Amiga Basic compiler, sbasic and ftext - several wonderful routines to help in basic programers, and Xscheme - an interpreted object oriented programing language.
DD65 C Tutorials - Several well done tutorials on how to program the Amiga. Includes tutorials and working examples on Device drivers, IFF reads and writes, Sound implementation, Arcade game design and implementation, Double Buffering, and others. A must have for Amiga Programmers.

SONY Blank Disks:

DSDD 3.5"

10 for $ 8.90 (.89 cents ea)
25 for $18.90 (.76 cents ea)
50 for $34.90 (.70 cents ea)
100 for $68.90 (.68 cents ea)
Sony QD-6150 data cartridge $24.00 ea.
No shipping charge on USA blank disk orders, Canada and Mexico add $.05 each, Sorry no other foreign.

Anti-Virus

Now Only $19.95

☆☆☆☆ , INFO Sep 89
✓✓✓✓ , Amiga Resource Oct89

Anti-Virus(c) is not Public Domain

Please send me the following:
Enter disk id (Ex. DD17, FD5, WB3

Following day shipping in most cases. No shipping charges within USA, Canada add $.25 each. Foreign add $.50 per disk for air mail delivery. Payment in US funds. A minimum of $20.00 required on credit card orders.

[ ] Payment Enclosed
[ ] Please charge my
[ ] Visa
[ ] Master charge

Account # ______________ Exp ___
Signature ______________
Name ______________
Address ______________
City ______________ ST ____ Zip ______

Total disks ___ x $ ______ each $ ______
Disked based catalog (add $2.50) $ ______
Anti-Virus (add $19.95) $ ______
Sony Blank Disks# ______ $ ______
CA residents add 7.25% sales tax $ ______
Foreign Shipping $ ______
Total Due $ ______

DevWare, 11835 Carmel Mtn Rd., #1304-A10 San Diego, CA 92128
Orders Only! 800 879-0759 **Support & Questions** 619 673-0759

a10

Circle 398 on Reader Service card.

The InfoMarket

AMIGAWORLD'S InfoMarket is a great opportunity for those with AMIGA products to reach over 95,000 Amiga owners. AmigaWorld is the only publication with a subscription offer reaching every new Amiga owner, national newsstand distribution by Kable News Co., and single copy sales in computer stores carrying the AMIGA as well as large bookstores such as B. Dalton and Walden Books.

To reserve your 1/12 or 1/9 page display ad call Heather Paquette at 1-800-441-4403 or 603-924-0100. We accept checks, money orders, MasterCard or VISA.

20 DISKS FOR UNDER $90!

20 DISKS OF THE MOST BEAUTIFUL ANIMATIONS AND BORDERS EVER CREATED FOR VIDEO, ALL UTILIZING COLOR ZERO SO YOU CAN ACHIEVE BROADCAST QUALITY VIDEO EFFECTS!

TURN BORING SEGMENTS INTO THE MOST EXCITING VIDEOS YOU HAVE EVER PRODUCED!

WITH 20 DISKS TO CHOOSE FROM YOU WILL NEVER HAVE A HARD TIME FINDING THE EFFECT THAT IS JUST RIGHT FOR YOUR SCENE.

INCLUDES IMPORTANT VIDEO UTILITIES AND REFERENCE CHARTS. THERE IS ALSO AN IN-DEPTH MANUAL COVERING EVERY ASPECT OF EACH AND EVERY EFFECT!

PLUS: A VIDEO COVERING ALL OF THE EFFECTS, FREE OF CHARGE!

ONLY $89.95

PLEASE ADD $6.00 FOR SHIPPING

"IF YOU USE YOUR AMIGA WITH VIDEO, YOU CAN'T DO WITHOUT THIS SET OF SOFTWARE!"

Call Us: (213) 874-7404
Fax Us: (213) 874-9460
WE ACCEPT VISA/MASTERCARD CHECK/M.O./C.O.D.

OR SEND YOUR ORDERS TO:
MICHAELANGELO PRODUCTIONS
1755 EL CERRITO PLACE #403
LOS ANGELES, CA. 90028

Circle 301 on Reader Service card.

HEY DIGITIZERS!

IMPROVE YOUR IMAGES!
GET THE RESULTS YOU WANT!!
MAKE MONEY WITH YOUR DIGITIZER!!!

ACHIEVE PROFESSINAL RESULTS USING THE KEY TECHNIQUES NOT EVEN COVERED IN THE MANUAL!

SECRET SOFTWARE TIPS PREVIOUSLY UNMENTIONED ARE ALL COVERED IN DETAL, GIVING YOU THE PROFESSIONAL EDGE.

THIS INFO-PACKED VIDEOTAPE COVERS EVERY ASPECT OF PROFESSIONAL DIGITIZING, AND HOW TO PROFIT FROM THIS KNOWLEDGE!

ONLY $19.95 + $2.50 S&H

"ANY 2 OF OUR INSTRUCTIONAL VIDEOTAPES FOR JUST $34.95!"

Call Us: (213) 874-7404
Fax Us: (213) 874-9460
WE ACCEPT VISA/MASTERCARD CHECK/M.O./C.O.D.

OR SEND YOUR ORDERS TO:
MICHAELANGELO PRODUCTIONS
1755 EL CERRITO PLACE #403
LOS ANGELES, CA. 90028

Circle 302 on Reader Service card.

WANNA WORK IN VIDEO?

YOU CAN DO IT!

YOU'VE READ ABOUT IT MONTH AFTER MONTH, BUT HOW CAN YOU GET INTO THE VIDEO BUISINESS?
WHAT WILL IT COST?
HOW CAN I USE MY AMIGA TO IT'S FULLEST WITH VIDEO?

ALL OF THESE QUESTIONS ARE ANSWERED IN THIS INFO-PACKED VIDEOTAPE COMPILED BY A WORKING HOLLYWOOD PRODUCTION COMPANY. THE TAPE LETS YOU KNOW WHAT HARDWARE YOU NEED, WHAT SOFTWARE IS THE BEST, AND MOST IMPORTANTLY HELPS YOU CHOOSE WHICH LEVEL OF VIDEO PRODUCTION IS RIGHT FOR YOU!

WE ARE CONFIDENT THAT THE HINTS, TIPS AND TRICKS WILL MAKE YOU PROFITABLE!

ONLY $19.95 + $2.50 S&H

"ANY 2 OF OUR INSTRUCTIONAL VIDEOTAPES FOR JUST $34.95"

Call Us: (213) 874-7404
Fax Us: (213) 874-9460
WE ACCEPT VISA/MASTERCARD CHECK/M.O./C.O.D.

OR SEND YOUR ORDERS TO:
MICHAELANGELO PRODUCTIONS
1755 EL CERRITO PLACE #403
LOS ANGELES, CA. 90028

Circle 300 on Reader Service card.

MEMORY FOR LESS

D RAM BLOWOUT!!

256 x 1 150n.s ....$ 2.00 ea.
256 x 1 120n.s .... 2.50 ea.
1 meg x 1 80n.s. ...... 8.00 ea.
256 x 4 100n.s. .... 7.00 ea.
256 x 4 80n.s. .... 7.50 ea.
256 x 4 80n.s. zips ... 8.00 ea.
256 x 4 100n.s. zips . 7.50 ea.
64 x 4 100n.s. .... 3.00 ea.
Paula / Denise..........56.50 ea.
1 meg x 8 Simm 80ns 58.00 ea.
ZIP Sockets Available
FATTER AGNUS 95.00
1.3 Kickstart ROM 29.95

For Amiga 3000
1 x 4 Static Zips........49.95
256 x 4 80n.s Static Zips 9.50

CPUs
68000 16 Mhz ....$ 35.00
68010 8/10 Mhz 35.00
68020 16 Mhz 75.00
20 Mhz 109.00
33 Mhz 199.00
68030 25 Mhz 289.00
33 Mhz 345.00

Math Co's
68881 12 Mhz 69.00
16 Mhz 75.00
20 Mhz 69.00
68882 25 Mhz 225.00
33 Mhz 275.00
All Crystals 10.00 ea.

APO/FPO, AK & HI, Foreign
Call for shipping charges

SPIRIT BOARDS	ØK	½ meg	1 meg	1½ meg	2 meg
IN 1000	$199	$215	$230	$231	—
SIN 500	$199	$235	$270	$309	$319
X-RAM 500/1000	$219	—	—	—	$339

MEMORY WORLD
2476 CROYDEN COURT
BENSALEM, PA 19020
ATTN: AMIGA DEPT.

215-741-6225
FAX 215-741-6229
Add $3.00 S&H Add $4.00 COD
VISA / MC / CHECK / COD

Circle 287 on Reader Service card.

EXPAND! EXPAND! EXPAND!

MEMORY	UNIT	2MB	4MB	6MB	8MB
256 X 4-80	$ 7	112	216	312	416
1 x 8-80 SIMM	60	120	230	330	440
256 x 1-80	2	128	256	364	486
1M x 1-80	7	112	216	312	416
256 x 4-80 SCRAM	10	160	320	456	608
1M x 4-80 SCRAM	52	208	416	600	800
ICD AdRAM 540	119	229	339	—	—
ICD AdRAM 560D	—	219	—	—	—
ICD AdRAM 2080	129	229	339	439	539
RAMWORKS 2000	119	219	329	429	529
SUPRARAM 2000	129	239	349	449	549
G. IMAGE RC2000	—	219	329	429	529
ICD AdSCSI 2080	199	309	419	519	619
GVP SERIES 2 HC	239	349	459	559	659

AE HD 3.5" DRIVE.......................195 ICD AdSPEED 263
DL EXPRESS/MNP/FAX ....199 ICD AdIDE 119
DL 2000/MNP/FAX........................159 FLICK F. VIDEO 379

$4.00 S/H Visa / MC / Money Order

ORDERS 800-735-2633

INFORMATION 408-626-1530

VISIONSOFT PO Box 22517 • Carmel, CA 93922

Circle 304 on Reader Service card.

SUPERIOR SOFTWARE

PETE — Keyboard familiarization for kids. See review in September 1990 *AmigaWorld*.

• List $29.95 •

Call or write: (503) 895-4575

Superior Software
33813 E. Market
Creswell, OR 97426

Circle 317 on Reader Service card.

FREE - 6 DISKS - FREE

FULL OF SOLID GOLD HITS

TRY US!

Get our Winter 1991 edition of bestsellers. 6/3.5" disks for Amiga® computers. Games, Business, Graphics, Education, Finance, more.

PAY ONLY $5.00 FOR SHIPPING

VISA

ORDER TODAY - CALL
619 942-9998
SMC SOFTWARE PUBLISHERS
since 1985

MasterCard

Circle 340 on Reader Service card.

COLOR RIBBONS & PAPER

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

Ribbons: Price Each	Black	Color	T-Shirt Ribbons
Brother M1109	$4.95	$5.95	$7.00
Citizen 200/GSX 140	4.50	5.50	7.50
Citizen GSX 140 4 color	—	*	—
Okidata 182/192	5.50	7.50	—
Panasonic 1190/1124	5.75	7.75	—
Seikosha SP800/1600	5.00	6.00	7.50
Star NX1000	3.75	4.75	6.75
Star NX1000 4-color	—	6.75	10.00

T-Shirt (Heat Transfer Ribbons)
Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

Color Paper	200 shts assorted	
Bright Pack:	91/2x11	$10.90/pk
Pastel Pack:	91/2x11	$8.90/pk
Color Certificate Paper:	100 sheets	$9.95/pk
Color Banner Paper:	45 ft/roll	$8.95/roll

Min. orders: $25.00. Minimum S&H: $4.00. Call for other ribbons and supplies. Price & spec. are subject to change w/out notice.

RAMCO COMPUTER SUPPLIES
PO Box 475, Manteno, IL 60950 U.S.A.
USA 800-522-6922 or 815-468-8081
(Canada) 800-621-5444

Circle 267 on Reader Service card.

Authorized Amiga Service Center

Special offer on the Enhanced Chip set and new 2.0 Operating system software. At ad time pricing is still tentative so call for detailed information and pricing.

****Special offer — We will install the new ECS for free with the purchase of the chips and software ($75.00 value). All you have to do is pay shipping.

Amiga 500 repair — $124.95 + shipping * Amiga 2000 repair — $189.95 + shipping * We also do all warranty repairs on Amiga systems bought from Authorized Dealers. Our turn around time is 1 to 3 days on ECS installation and repairs. Other Specials:

AmigaVision ....$ 99.00
A2000 Power Supply 143.00
8520 Chip.................................16.50
Fatter Agnus Chip 90.00
Janus Library 2.0 ....27.00
A500 Keyboard 112.00
A2000 Keyboard 118.00
1.3 Kickstart ROM....................29.00
SuperGen 2000S genlock ..$1769.00
Supra External Drive 119.00
Supra 501 RAM Exp. 85.00
Heavy Duty A500 Pow Sup.....119.00
All Supra 5000XP HD in stock...**Call**
All RAM Chips in stock ....**Call**
All Baseboard config in stock ....**Call**
All Quantum Drives in stock ......**Call**

Many other products in stock including over 600 software titles. If you are in the area please stop by to see the complete line of Amiga computers.

Software Hut, Inc.
2534 S. Broad St.
Philadelphia, PA 19145

To order call (800) 848-0079
In PA or for information call (215) 462-2268

* Please call for complete details on these repairs and to get an authorization number.

Circle 261 on Reader Service card.

EAR TO THE WALL

Lotus wilts? *AmigaWorld* intimated a while back that Lotus is working on an Amiga version of its 1-2-3 spreadsheet. Some recent snooping on CompuServe revealed rumors of a standoff between Commodore and Lotus. Apparently, Lotus is seeking direct financial reward for its port. Our sources report that the deal isn't dead, but could be stymied.

A competitor in? Several sources at Microsoft reveal an increased interest in the Amiga and its installed base of some two million machines. This industry giant is thinking of an Amiga version of its popular integrated package, Microsoft Works. An Amiga Works probably would not, however, see the light of day inside of two years, if ever. Admittedly, that's slow going—but Microsoft has a habit of getting things right the first time around.

Toaster Mania. NewTek's active shipping of its Video Toaster has generated celebrity interest right off the bat. Here's a quick tally of highbrows who reportedly own or have expressed an interest in the Toaster: The manager of Pink Floyd, ZZ Top, Michael Winfield (the cop with all the sound effects in the Police Academy movies), Danny Elfman (credited with Batman, Dick Tracy, Simpson's sound tracks, and the leader of Oingo Boing) and Todd Rungren, who is reportedly going to acquire five units. This may be just the tip of the celebrity iceberg.

Money, Money, Money. Here are a few tidbits from the 1990 Commodore Annual Report: Irving Gould owns 20% of Commodore stock, or 6,595,338 shares. Alexander M. Haig owns 1,500 shares and will remain on the board until 1993, unless voted out. At $2,015,949, Mehdi R. Ali, president of Commodore International, actually makes more than Chairman Irving Gould, who only pulls $1,750,000.

SOAP BOX



EDITOR'S NOTE: As we start 1991, you will notice some changes in ***Last Licks****—one of which is our new "Soap Box" column. Each month we will present an opinion piece—an essay, really—that we hope will provide food for thought for members of the Amiga community. Essays will come from a variety of different members of that community:* AW *editors and readers, Amiga users and developers, or even a spokesperson from Commodore on occasion. We welcome feedback from all quarters; perhaps some of the responses may become the basis for future "Soap Box" essays. If you would like to reply to any opinions expressed here, please write to Jan Jackson, "Soap Box,"* AmigaWorld, *Elm St., Peterborough, NH 03458.*

A View from the Patio

IN MY SHORT tenure as an *AmigaWorld* staffer, I have had the good fortune to learn a lot about the Amiga and its community. As Amiga users tend to be a helpful lot, that part was easy: All I had to do was listen. Unfortunately, during the listening process, I took in a great deal more than just information, namely, some pretty strong opinions and a lot of conjecture on a variety of topics. I read it in magazines and in the promotional literature from developers, and I heard it at trade shows and during telephone conversations: "[The people at] Commodore don't know what they're doing"...."IBM and Apple computers stink"...."The Amiga does it better than that piece of junk!"...."Spreadsheets and networks are for those IBM nerds," and so on, along with other choice remarks all designed to bolster one ego while disparaging another.

What does this type of behavior prove? The answer is: Nothing. If there is a "bottom line," it is that everyone who uses, writes about, talks about, or makes his or her daily bread from the existence of the Amiga has a stake in its future. Not one of us wants to see it fall under the heels of a corporate giant (whether spelled with three letters or five). We all know that our worst fears will be realized if the Amiga fails to attract the new users it requires to make its market grow and prosper.

But how do we accomplish this? Not by publicly lambasting Commodore management. Not by offering to buy up the company's loose stock as a feeble and inane protest (something proposed recently by a member of the Amiga Developers' Association). Nor will we do it by rabidly shouting that our Amiga is the only computer that can generate a pretty picture. Many computers can do that. They just cost more.

While prospective users may be uninformed about the Amiga, they're not ignorant. We can convince them of the Amiga's superiority only by *showing* them and the rest of the world how good the Amiga really is. It does little good to preach to those who are already seated in the choir loft. So, get out there, grab a friend, and show them what the Amiga can do—not what the other machines can't do. No matter how good it makes you feel, ego bashing is a tactic that earns only contempt from its recipient and from everyone who witnesses it.

Because it is impossible to separate a computer from its software base, third-party developers will have a very large role to play. They must begin to think more about the mundane but necessary elements (and less about the bells and whistles) that make up a good software package. They must take seriously the fact that not everyone who sits behind the Amiga's keyboard is a programmer.

Many applications manuals are well below par (in an industry where the norm is based on there being so many bad manuals); help screens are sparse; install programs that work are a rare Sunday treat. Our marketing also needs a dose of professionalism if we are to be taken seriously in a competitive global market. Here's a place where the ADA can invest its money to reap a princely return.

If we are to expand the Amiga's circle of influence, we must venture from our tidy backyards and greet the computing world on its own terms.

—John Wolfskill
Senior Writer, Technology

ILLUSTRATED BY LARRY KEENAN

To Receive FREE Product Information

AMIGA WORLD

TEAR
out the perforated card. Please print or type your name and address where indicated.

CIRCLE
the numbers on the card that correspond to the reader service numbers on the advertisements that interest you.

ORDER
a one year subscription to AmigaWorld by circling 500 on the card.

MAIL
the card with your check, money order or U.S. currency to:
AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170
Or, you may request billing.

LOOK FOR
your subscription in 10 to 12 weeks.

REMEMBER
to put the proper postage on the card.

READER SERVICE

January card valid until March 31, 1991.

☐ Mr. Name ____________________

☐ Mrs. Company ____________________

☐ Ms. Title ____________________

Address ____________________

City/State/Zip ____________________

Telephone ____________________

Fax ____________________

A. What kind of Amiga do you own?
☐ 1. Amiga 500 ☐ 4. Amiga 2500
☐ 2. Amiga 1000 ☐ 5. Amiga 3000
☐ 3. Amiga 2000 ☐ 6. None

B. Which categories of software coverage do you find useful in *AmigaWorld*?
☐ 7. Entertainment ☐ 15. Financial Management
☐ 8. Word Processing ☐ 16. Graphics
☐ 9. Communications ☐ 17. Education
☐ 10. Spreadsheets ☐ 18. Music
☐ 11. Home Productivity ☐ 19. Animation
☐ 12. Programming ☐ 20. Multimedia
☐ 13. Video
☐ 14. Database Management

C. What regular monthly sections of *AmigaWorld* do you find valuable? (Check more than one, if you wish.)
☐ 21. Editor's Column ☐ 27. Reviews (general)
☐ 22. Repartee (letters) ☐ 28. Game Reviews
☐ 23. Notepad ☐ 29. Hors d'oeuvres
☐ 24. info.phile ☐ 30. What's New?
☐ 25. Accent on Graphics ☐ 31. Help Key
☐ 26. pointers ☐ 32. Last Licks

D. Do you find the articles in *AmigaWorld* (excluding all regular monthly columns) to be:
☐ 33. The most valuable part of the magazine.
☐ 34. Generally useful or interesting.
☐ 35. Occasionally useful or interesting.
☐ 36. Of little use or interest.

E. What kinds of articles (not columns) do you find valuable? (Check more than one, if you wish.)
☐ 37. Tutorials on using a specific product.
☐ 38. Comparative round-ups of a particular category of products.
☐ 39. "How-to" articles and projects.
☐ 40. Buyer's Guides
☐ 41. Articles explaining a particular subject in depth.
☐ 42. Tips and techniques advice.
☐ 43. Stories on interesting Amiga users.
☐ 44. Amiga industry news and company developments.

F. If you are not a subscriber, please circle 499 on this card.

G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is $29.97. Canada and Mexico $38.97, Foreign Surface, $49.97, Foreign Airmail $84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10–12 weeks for delivery.

1	6	11	16	21	201	206	211	216	221	401	406	411	416	421
2	7	12	17	22	202	207	212	217	222	402	407	412	417	422
3	8	13	18	23	203	208	213	218	223	403	408	413	418	423
4	9	14	19	24	204	209	214	219	224	404	409	414	419	424
5	10	15	20	25	205	210	215	220	225	405	410	415	420	425
26	31	36	41	46	226	231	236	241	246	426	431	436	441	446
27	32	37	42	47	227	232	237	242	247	427	432	437	442	447
28	33	38	43	48	228	233	238	243	248	428	433	438	443	448
29	34	39	44	49	229	234	239	244	249	429	434	439	444	449
30	35	40	45	50	230	235	240	245	250	430	435	440	445	450
51	56	61	66	71	251	256	261	266	271	451	456	461	466	471
52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
54	59	64	69	74	254	259	264	269	274	454	459	464	469	474
55	60	65	70	75	255	260	265	270	275	455	460	465	470	475
76	81	86	91	96	276	281	286	291	296	476	481	486	491	496
77	82	87	92	97	277	282	287	292	297	477	482	487	492	497
78	83	88	93	98	278	283	288	293	298	478	483	488	493	498
79	84	89	94	99	279	284	289	294	299	479	484	489	494	499
80	85	90	95	100	280	285	290	295	300	480	485	490	495	500
101	106	111	116	121	301	306	311	316	321	501	506	511	516	521
102	107	112	117	122	302	307	312	317	322	502	507	512	517	522
103	108	113	118	123	303	308	313	318	323	503	508	513	518	523
104	109	114	119	124	304	309	314	319	324	504	509	514	519	524
105	110	115	120	125	305	310	315	320	325	505	510	515	520	525
126	131	136	141	146	326	331	336	341	346	526	531	536	541	546
127	132	137	142	147	327	332	337	342	347	527	532	537	542	547
128	133	138	143	148	328	333	338	343	348	528	533	538	543	548
129	134	139	144	149	329	334	339	344	349	529	534	539	544	549
130	135	140	145	150	330	335	340	345	350	530	535	540	545	550
151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
153	158	163	168	173	353	358	363	368	373	553	558	563	568	573
154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

READER SERVICE

January card valid until March 31, 1991.

☐ Mr. Name ____________________

☐ Mrs. Company ____________________

☐ Ms. Title ____________________

Address ____________________

City/State/Zip ____________________

Telephone ____________________

Fax ____________________

A. What kind of Amiga do you own?
☐ 1. Amiga 500 ☐ 4. Amiga 2500
☐ 2. Amiga 1000 ☐ 5. Amiga 3000
☐ 3. Amiga 2000 ☐ 6. None

B. Which categories of software coverage do you find useful in *AmigaWorld*?
☐ 7. Entertainment ☐ 15. Financial Management
☐ 8. Word Processing ☐ 16. Graphics
☐ 9. Communications ☐ 17. Education
☐ 10. Spreadsheets ☐ 18. Music
☐ 11. Home Productivity ☐ 19. Animation
☐ 12. Programming ☐ 20. Multimedia
☐ 13. Video
☐ 14. Database Management

C. What regular monthly sections of *AmigaWorld* do you find valuable? (Check more than one, if you wish.)
☐ 21. Editor's Column ☐ 27. Reviews (general)
☐ 22. Repartee (letters) ☐ 28. Game Reviews
☐ 23. Notepad ☐ 29. Hors d'oeuvres
☐ 24. info.phile ☐ 30. What's New?
☐ 25. Accent on Graphics ☐ 31. Help Key
☐ 26. pointers ☐ 32. Last Licks

D. Do you find the articles in *AmigaWorld* (excluding all regular monthly columns) to be:
☐ 33. The most valuable part of the magazine.
☐ 34. Generally useful or interesting.
☐ 35. Occasionally useful or interesting.
☐ 36. Of little use or interest.

E. What kinds of articles (not columns) do you find valuable? (Check more than one, if you wish.)
☐ 37. Tutorials on using a specific product.
☐ 38. Comparative round-ups of a particular category of products.
☐ 39. "How-to" articles and projects.
☐ 40. Buyer's Guides
☐ 41. Articles explaining a particular subject in depth.
☐ 42. Tips and techniques advice.
☐ 43. Stories on interesting Amiga users.
☐ 44. Amiga industry news and company developments.

F. If you are not a subscriber, please circle 499 on this card.

G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is $29.97. Canada and Mexico $38.97, Foreign Surface, $49.97, Foreign Airmail $84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10–12 weeks for delivery.

1	6	11	16	21	201	206	211	216	221	401	406	411	416	421
2	7	12	17	22	202	207	212	217	222	402	407	412	417	422
3	8	13	18	23	203	208	213	218	223	403	408	413	418	423
4	9	14	19	24	204	209	214	219	224	404	409	414	419	424
5	10	15	20	25	205	210	215	220	225	405	410	415	420	425
26	31	36	41	46	226	231	236	241	246	426	431	436	441	446
27	32	37	42	47	227	232	237	242	247	427	432	437	442	447
28	33	38	43	48	228	233	238	243	248	428	433	438	443	448
29	34	39	44	49	229	234	239	244	249	429	434	439	444	449
30	35	40	45	50	230	235	240	245	250	430	435	440	445	450
51	56	61	66	71	251	256	261	266	271	451	456	461	466	471
52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
54	59	64	69	74	254	259	264	269	274	454	459	464	469	474
55	60	65	70	75	255	260	265	270	275	455	460	465	470	475
76	81	86	91	96	276	281	286	291	296	476	481	486	491	496
77	82	87	92	97	277	282	287	292	297	477	482	487	492	497
78	83	88	93	98	278	283	288	293	298	478	483	488	493	498
79	84	89	94	99	279	284	289	294	299	479	484	489	494	499
80	85	90	95	100	280	285	290	295	300	480	485	490	495	500
101	106	111	116	121	301	306	311	316	321	501	506	511	516	521
102	107	112	117	122	302	307	312	317	322	502	507	512	517	522
103	108	113	118	123	303	308	313	318	323	503	508	513	518	523
104	109	114	119	124	304	309	314	319	324	504	509	514	519	524
105	110	115	120	125	305	310	315	320	325	505	510	515	520	525
126	131	136	141	146	326	331	336	341	346	526	531	536	541	546
127	132	137	142	147	327	332	337	342	347	527	532	537	542	547
128	133	138	143	148	328	333	338	343	348	528	533	538	543	548
129	134	139	144	149	329	334	339	344	349	529	534	539	544	549
130	135	140	145	150	330	335	340	345	350	530	535	540	545	550
151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
153	158	163	168	173	353	358	363	368	373	553	558	563	568	573
154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

READER SERVICE

To Receive FREE Product Information

AMIGA WORLD

TEAR
out the perforated card. Please print or type your name and address where indicated.

CIRCLE
the numbers on the card that correspond to the reader service numbers on the advertisements that interest you.

ORDER
a one year subscription to AmigaWorld by circling 500 on the card.

MAIL
the card with your check, money order or U.S. currency to:
AmigaWorld
Reader Service Dept.
P.O. Box 5170
Pittsfield, MA 01203-5170
Or, you may request billing.

LOOK FOR
your subscription in 10 to 12 weeks.

REMEMBER
to put the proper postage on the card.

READER SERVICE

PLEASE USE FIRST CLASS LETTER POSTAGE

AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170

PLEASE USE FIRST CLASS LETTER POSTAGE

AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170

Subscribe Now And Save 37%!

☑ **YES!** I want to save 37% off the newsstand rate. Enter my 1 year (12 issue) subscription to AmigaWorld for the low price of $29.97 and rush me my FREE copy of the Amiga Sampler Disk. If I'm not satisfied at any time, I will receive a full refund — no questions asked!



☐ Payment enclosed ☐ Bill me

Name ______________________________

Address ______________________________

City ______________ State ________ Zip ____________

Canada & Mexico $38.97, Foreign Surface $49.97. Foreign Airmail $84.97 (U.S. funds drawn on U.S. bank). Prepayment is required on all Foreign Surface and Foreign Airmail orders. All prices are 1 year only. Please allow 6-8 weeks for delivery.

AMIGA WORLD

411F0

FREE Amiga Sampler DISK

Subscribe Now And Save 37%!

☑ **YES!** I want to save 37% off the newsstand rate. Enter my 1 year (12 issue) subscription to AmigaWorld for the low price of $29.97 and rush me my FREE copy of the Amiga Sampler Disk. If I'm not satisfied at any time, I will receive a full refund — no questions asked!



☐ Payment enclosed ☐ Bill me

Name ______________________________

Address ______________________________

City ______________ State ________ Zip ____________

Canada & Mexico $38.97, Foreign Surface $49.97. Foreign Airmail $84.97 (U.S. funds drawn on U.S. bank). Prepayment is required on all Foreign Surface and Foreign Airmail orders. All prices are 1 year only. Please allow 6-8 weeks for delivery.

AMIGA WORLD

411F0

FREE Amiga Sampler DISK

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT #1247 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough
AmigaWorld
P.O. Box 50365
Boulder, CO 80321-0365

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT #1247 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough
AmigaWorld
P.O. Box 50365
Boulder, CO 80321-0365

HERE'S ANOTHER TIP!

SUBSCRIBE THIS MONTH TO

AMIGA WORLD

AND GET A FULL YEAR OF FANTASTIC HINTS, TIPS AND TECHNIQUES FOR JUST $29.97!

✔ **YES!** Please enter a one-year subscription for me to *AMIGAWORLD* for just $29.97 and send me my FREE Amiga Sampler Disk right away!

☐ Bill Me ☐ Payment enclosed

Name______________________________

Address______________________________

City________________State________Zip________

Please make checks payable to *AMIGAWORLD* Magazine.
Canada & Mexico $34.97, Foreign Surface $49.97, Foreign Airmail $84.97. (U.S. funds drawn on U.S. bank). Prepayment is required on all Foreign Surface and Foreign Airmail orders. All prices are 1 year only. Please allow 6-8 weeks for delivery.

41114

Before mailing, please detach and save this month's tip!

TIP

OF THE MONTH FROM

AMIGA WORLD

The Workbench's System Directory
The System directory contains tools that you can call from the Workbench – DiskCopy, FastMemFirst, NoFastMem, FixFonts, Format, InitPrinter, GraphicDump, and SetMap.

DiskCopy lets you make backup copies of your disks. Selecting the DiskCopy icon, however, does not start the copying function. You have to use the CLI DISKCOPY command or drag one disk icon on top of another.

FastMemFirst rearranges the system memory lists so that auto-configured memory (expansion memory that automatically tells the operating system, via special routines in Kickstart, what it is, where it is, and what it needs for system resources) appears on the system list ahead of any other non-autoconfigured memory.

Rather than rearranging, **NoFastMem** disables all memory beyond the 512K that reboots your system and that the custom chips

Continued on other side

(Agnus, Denise, and Paula) can access. Some early programs written for a 512K Amiga assume that there is no other memory available and will not run on expanded sytems. Using NoFastMem you can run many of these early programs on Amigas with more than 512K of memory.

If you delete or add any fonts to your fonts directory, the internal list of available fonts may not reflect the current contents of your disk. Running **FixFont** patches the system list to match the disk configuration. You need to run this tool only if you change the contents of the fonts directory after a boot. AmigaDOS updates the systems' font list automatically when you boot the system.

Format lets you prepare a new disk to store information. You can call this function with Initialize on the Workbench menu or with the CLI FORMAT command.

Many printers require the computer to send an initialization sequence (a special string of characters) before sending a document. If your software does not transmit such a sequence, you can use **InitPrinter** to initialize your printer.

GraphicDump lets you take a snapshot of your screen and "dump" (send) it to your printer.

SetMap lets you specify how the Amiga interprets the keyboard. You can change the keyboard to use American, British, French, or any of eight other international character sets.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT #73 PETERBOROUGH, NH

POSTAGE WILL BE PAID BY ADDRESSEE

The AmigaWorld Tech Journal
P.O. Box 802
Peterborough, NH 03458-9971

AMIGA VISION™

$25 Rebate

Please print:

____
Name

____
Address

____
State *Zip*

____
Phone

To introduce you to our powerful new multimedia authoring system, AmigaVision,™ Commodore Business Machines, Inc. is offering a $25.00 rebate. This applies to all purchases of AmigaVision made between October 15, 1990 and January 31, 1991. To get your rebate, simply complete this card and mail along with your AmigaVision Warranty card and a dated sales receipt to:

Commodore Business Machines, Inc.
AmigaVision Rebate Offer
440 Pennington Avenue
Trenton, NJ 08650

Allow 4-6 weeks for receipt of your rebate check. AmigaVision that has been bundled with the purchase of a CPU is not eligible for rebate. Only AmigaVision that has been purchased separately is eligible. Limit one (1) coupon per customer purchase. No photocopies of this coupon will be accepted. Void where prohibited.

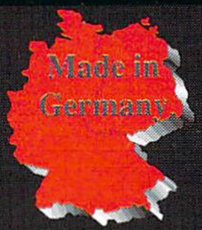
Must be redeemed by February 28, 1991.

Commodore® Business Machines, Inc.

GOLEM

Europe's Largest Amiga Developer

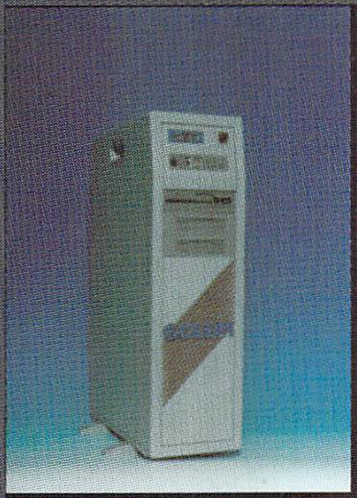






Golem Tower

Put your A2000 in the Golem Tower and clean up your desk! Fits all your external units, such as hard drives (up to 1 gigabyte), 2 3.5" floppy drives, 2 5.25" floppy drives, a tape streamer and much more.



Golem Drives

High quality Amiga floppy disk drives with a pass through buss, On/Off switch, dust proof casing, built in LED track display.

Track Display for the Amiga 2000 shows actual position of stepper and heads of both internal disk drives. There's no drop in disk speed or software required.



Golem SCSI II Controller

• State of the Art •
High performance SCSI controller with 16 Bit SCSI II bus system, DMA Free data transfer, up to 1.42 MB/sec transfer rate. Available as either an internal card for the A2000 series or in a external case for the A500 or A1000.

Golem, Inc. • 421 Hudson, M12 • New York, NY • 10014
Tel: (212) 727-0548 • Fax: (212) 627-3965

Circle 316 on Reader Service card.